REVERENCE IN A WORLD OF SCIENCE-BASED TECHNOLOGY.
KNUTSON, EVELYN ELIZABETH
ProQuest Dissertations and Theses; 1978; Dissertations & Theses @ Claremont School of Theology

REVERENCE IN A WORLD OF SCIENCE-BASED TECHNOLOGY

A Professional Project

Presented to

the Faculty of

School of Theology at Claremont

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Ministry

---

by

Evelyn Elizabeth Knutson

May 1978

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

This professional project, completed by

Evelyn Elizabeth Knutson

has been presented to and accepted by the Faculty of the School of Theology at Claremont in partial fulfillment of the requirements for the degree of

DOCTOR OF MINISTRY

Faculty Committee

C. Dean Freudenberger

John B. Cobb, Jr.

April 3, 1978
Date

Joseph C. Hough, Jr.
Dean

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ACKNOWLEDGMENT

Reverend George and Penelope Poor have walked the road with me from an engineering career to the pastoral ministry. Their counsel helped me to express my own experiences of God within his universe.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

TABLE OF CONTENTS

		Page
LIST OF TABLES		v
LIST OF FIGURES		vi
Chapter		
1	INTRODUCTION	1
	THE PROBLEM HUMANKIND FACES	2
	THESIS	3
	BACKGROUND	5
	THEORETICAL FRAMEWORK	8
	METHODOLOGY: SCOPE AND LIMITATIONS	11
	RECENT RESEARCH	13
	OUTLINE OF THE PROJECT	17
2	TECHNOLOGY AND STEWARDSHIP	19
	NATURE	22
	NORMATIVE JUDGMENT	30
3	TECHNOLOGY, HUMILITY AND WISDOM	36
	TECHNOLOGICAL POWER AND HUMILITY	42
	NORMATIVE JUDGMENTS	49
4	PRAISE AND REVERENCE	52
	REVERENCE FOR A PERSON, PRAISE OF GOD	55
	NORMATIVE JUDGMENTS	62
5	ISSUES FOR THE CHURCH	64
	BIBLE CLASSES	65
	PASTORAL PREACHING	67
GLOSSARY		69
BIBLIOGRAPHY		72

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Page

APPENDIXES 75

A. ECUMENICAL INQUIRY BY WORLD COUNCIL OF CHURCHES. 76

B. LESSON PLANS 85

C. SERMON AND EVALUATION. 88

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF TABLES

Table		Page
1.	International Meetings, Anticipation and Issues	79
2.	Lesson Goals	85
3.	Lesson Plan 1 - Stewardship.	86
4.	Lesson Plan 2 - Humility and Wisdom. . . .	87
5.	Form for Evaluation of Preaching	94

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF FIGURES

Figure		Page
1	Basic Interactions Between Population Growth and Capital Accumulation.	24
2	DYNAMO Flow Diagram for WORLD Model. . . .	25

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ABSTRACT

We come to an unique time in history. Today as never before humankind is experiencing at once its deepest level of poverty and the rapid depletion of its natural resources. The problem is how to develop an attitude of reverence for the earth's resources and for humankind.

We as ministers in the Church can state a reverence for humankind and nature and can develop an attitude of reverence in various ways among which are Bible studies and pastoral preaching. This is based upon the Biblical doctrine of creation. God created the heaven and the earth. God saw that his creation was good. God created humankind in his image.

The ethical issues involve technology, people and the physical world and relate to what is good for nature and people. Technology affects nature, people and the carrying capacity of our globe. Ethical issues relate to the over-production of nuclear power and its hazards to nature and people. Technology affects human actions and technological power when it is used with humility. The idea that creation provides a ground for reverence and that from this reverence issues definite ethical precepts is explored in our present technological context. Conclusions are drawn from the insights gained from this synthesize of ethical issues and concepts using Biblical interpretations of creation and stewardship.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 1

INTRODUCTION

The unmanned spacecraft had just orbited the moon for the first time in history. It was man's first maneuver around another planetary object. The space team in mission control on earth just stood with a sense of awe, with reverence. Our mathematical calculations had matched the action of the universe! Yet it had taken more than our mathematical and engineering capabilities because we had lost our track on the distant star, Canopus, because we had lost immediate access to the flight's telemetry data and because we had missed our last command transmission to the spacecraft as it approached the moon. Our reason had been surpassed and I fell in love with the Creator. And the earth and the moon and all mankind became sacred. As I viewed the earth beyond the horizon of the moon, I sensed the greatness of God and the minuteness of a person here on earth. As I viewed the crest of the crater Copernicus from valley floor using modern technology in optics and photography, I sensed the majesty of our creator, God.

Later each one of us on the space team would choose how we would use our mathematical and engineering capabilities to explore further the planetary system. Would we turn to military applications or express the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

feeling of the sacredness of humankind and nature and our commitment to God as creator of this universe?

Later this sense of reverence, mystery and sacredness was to turn to anguish because the power used to conquer earth and to put the spacecraft into the translunar trajectory was to be used to provide continuing orbit around earth of a spacecraft for the surveillance of other people and restriction of freedom of people.

Yet, this limitation of human freedom is small compared with a greater and more basic problem that humankind is facing today.

THE PROBLEM HUMANKIND FACES

We have come to an unique time in history. Today as never before humankind is experiencing at once its deepest level of poverty and the rapid depletion of its natural resources. "According to the World Bank, 755 million people are in absolute poverty with annual income of US $50 or less."[1] "The oil embargo of 1973, the energy crisis linked with the rapid rise in the price of oil, and the possible exhaustion of fossil fuels have obligated many nations to press for alternative

---

[1]"The Contribution of Faith, Science and Technology in the Struggle For A Just and Sustainable Society," Anticipation, no. 23 (November 1976), 29.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

sources of energy."[2] In addition, the risks of nuclear energy threaten life and the environment.

The problem is also that solutions cannot be attained without an attitude of reverence. The problem is how to develop an attitude of reverence for the earth's resources and for humankind. When we attain an attitude of reverence, these things will be:

> The need for food at any one time will be well below the global capacity to supply it. The rate of use of non-renewable resources will not outrun the increase in resources made available through technological innovation. The emission of pollutants will be well below the capacity of the earth to absorb them.[3]

John B. Cobb, Jr., in his book, Is It Too Late?, raises the question of whether we have passed the point of no-return in solving the problems which we have just stated.

THESIS

We as ministers in the Church can state a reverence for humankind and nature and can develop an attitude of reverence in various ways among which are Bible studies and pastoral preaching. This reverence is based upon the Biblical doctrine of creation. God created the heaven and the earth. God saw that his creation was good. God created humankind in his image.

---

[2]"Plan For An Ecumenical Hearing On the Risks and Potentialities of the Further Expansion of Nuclear Power Programmes," Anticipation, no. 20 (May 1975), 4.

[3]"The Contribution of Faith . . .," p. 29.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

It has been made known to humankind what is good. The word is written in our heart.

People with reverence sustain humankind and nature within the limitations of the carrying capacity of our globe and prevent the deterioration of humankind in urban and rural areas. People with this reverence act with humility when using technological power that endangers life and the environment. Acting in this manner expresses reverence. People praise God, their Creator. We as ministers, with this conviction, can develop reverence and put together a hope for humanity with a suggestion of its need and its possibility.

Further, David Gill, a member of the staff of the World Council of Churches' Department on Church and Society, calls for a specific contribution by the churches to an attitude of reverence for humankind and natural resources of nature:

> . . . Among scientists, technologists, futurologists and planners in government and industry there is an astounding openness to people willing to think alongside them and look at their problems quite deliberately from a perspective of Christian faith. This openness is by no means restricted to those individuals who would normally call themselves "religious." For scientists and planners are well aware that, whether they like it or not, their work lands them in the midst of the most profound and agonizing ethical dilemmas of our time--dilemmas which they, as scientists or planners, are simply not equipped to resolve; dilemmas of which our society at large is but dimly aware. They are open to--indeed, many of them are yearning for--whatever insights our Christian tradition may have to contribute to the building of tomorrow's world. But they are also well

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

> aware that at present our churches are not equipped to enter the debate. Far from being in a position to offer ready answers, we have barely begun listening to discern the real questions. The urgency of the issues, the openness of the experts and the unreadiness of the churches amounts to a clear call for action now.[4]

This is a statement with which the author agrees and which delineates the importance of my thesis in facing the technological problem now.

BACKGROUND

As an engineer, I have been involved in the United States moon-space program. During this activity I have come to recognize the finiteness of man's knowledge within our universe, the eternal order of our universe, and also the finiteness of technological power upon earth. I have worked on the acquisition of research facilities for a manned space flight simulator by planning the computer simulation for an earth orbiting spacecraft; on the planning of the flight simulation of the Saturn 5 rocket, main booster rocket for Apollo; on the design of the computer software for three deep space stations around earth to process telemetry and command data for the Lunar Orbiter, unmanned space probe; as data controller at the Space Flight Operation Facility during

---

[4]David Gill, "Editorial Note, Technology in the Struggle For A More Humane Future: A Challenge to the Churches," Anticipation, no. 2 (June 1970), 1.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the first space mission where the unmanned space vehicle, Lunar Orbiter, orbited the moon and photographed it for the Apollo mission; and on various analytic functions in support of the moon-space program. I felt a sense of deep reverence as I worked.

We have developed vast technological powers which can be used to preserve the creation or to destroy the creation. We do not know the cumulative effects of technological powers. Hans Jonas states:

> . . . The containment of nearness and contemporaneity is gone, swept away by the spatial spread and time-span of the cause-effect trains which technological practice sets afoot, even when undertaken for proximate ends.[5]

This is a situation of which I am very much aware. I have entered the Christian ministry because of this awareness. Of course, it is a faith stance based upon a revelation of eternal order and upon my understanding of the Biblical tradition. Cognitive philosophical reasoning is secondary because I believe that all mathematical, scientific and philosophical systems have their limitations.

The poverty and exploitation of a large section of humankind and the threat to the environment have come more and more into my personal feelings and reactions. There is one experience which leads me to this deep concern.

---

[5]Hans Jonas, Philosophical Essays. From Ancient Creed to Technological Man (Englewood Cliffs: Prentice-Hall, 1974), p. 9.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

From Victoria Park in Hong Kong, I looked down the picturesque hillside at the trees, the houses, the shelters, the markets, the hotels and the harbor. The sea, the sampans, the ferries, the freighters and the sky before the storm were beautiful. Later, I walked along the beach as I have done at home most of my life. I met a woman who had spent her entire life with her family upon a sampan in the harbor. Then the typhoons came, the shelters washed down the hillside, the sampans overturned, the peasants died. Then I felt this city was not one that I could live in because I could not face the poverty of its people. Then the sense of dignity and worth of humankind challenged me to raise this question of whether it is possible for these peasant people also to have freedom, privilege and justice as I do. Two experiences, this one with humankind and one with my view of nature from the mission control center, convinced me that I must work for justice of human beings and preservation of nature. This is what reverence is to me.

At the same time I am aware of the vast potential of the scientific community, which can be directed to deal with the problems mentioned above through value changes. Through the recent studies by the Department on Church and Society, World Council of Churches, I see the Church bringing a broader perspective to the world of science-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

based technology. I have some growing insights of what the dimensions of ministry could be in light of this problem.

THEORETICAL FRAMEWORK

In this professional project I am assessing the quality or the character and the need or the place for an attitude of reverence in a society in a world of science-based technology. A society with an attitude of reverence will accept this general axiom:

> That there ought to be through all future time such a world fit for human habitation, and that it ought in all future time to be inhabited by a mankind worthy of the human name.[6]

First, to substantiate this thesis, the author asserts that ethics does not have an adequate answer to the problem that humankind faces today. Hans Jonas, the Jewish philosopher and scientist, states the basic problem of contemporary ethics:

> Modern ethical theory, or philosophical ethics, has notoriously no answer to this quandary of contemporary man. Pragmatism, emotivism, linguistic analysis deal with the facts, meanings and expressions of man's goal settings, but not with the principles of it--denying, indeed, that there are such principles. And existentialism even holds that there ought not to be . . .
>
> To me it is amazing that none of the contemporary schools in ethical theory comes to grips with the awesome problem posed by the combination of this anarchy of human choosing with the apocalyptic power of contemporary man--the combination of near-omnipotence with near-emptiness.[7]

---

[6]Ibid., p. 12.

[7]Ibid., p. 176.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Here the ethical argument is based upon the premises that humankind is good, that nature is good and that whatever enhances either one or both is good. The author agrees with a very basic statement that Hans Jonas makes:

> . . . These (biblical) propositions, i.e., what through the symbolism of their literal meaning they suggest about reality, are of course in no way "refuted" by anything science has found out about the world and ourselves. . . . It is, however, the case . . . that the psychological atmosphere created by science and reinforced by technology is peculiarly unfavorable to the visibility of that transcendent dimension which the biblical propositions claim for the nature of things.[8]

To substantiate these premises, the author makes normative judgments regarding the present use of the earth's resources and society's attitude and action toward humankind. As William K. Frankena says,

> This may take the form of asserting a normative judgment . . . giving or being ready to give reasons for these judgments. Or it may take the form of debating with oneself or with some one else about what is good or right as a particular or a general principle, and then forming some normative judgments as conclusions.[9]

The sections on normative judgments within chapters two, three and four analyze what ought to be done by the Church and the pastoral ministry through Bible studies and pastoral preaching in achieving reverence in a world of science-based technology. The essays in

---

[8]Ibid., p. 177.

[9]William K. Frankena, Ethics (Englewood Cliffs: Prentice-Hall, 1973), p. 4.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Anticipation are also a source of normative judgments about ethical issues.[10] These essays provide an exchange of information and ideas in the ecumenical inquiry, The Future of Man and Society in a World of Science-Based Technology under the auspices of the Department of Church and Society, World Council of Churches. Judgments are based on the ideas that humanity is good; that power must be used with humility; and that our creator, God is dependable. Anthropology of the Old Testament provides an interpretation of these Biblical qualities and a description of empirical inquiry, historical and scientific, as done by anthropologists. "Here, the goal is to describe or explain the phenomena of morality or to work out a theory of human nature which bears on ethical questions."[11] Judgments are based upon the Bible in general and the life of Christ in particular. The Bible is the source of ethical criteria for Christians who, in faith, recognize the life, teachings and actions of Jesus Christ as normative for Christians and actually for all humankind. As Paul Lehmann defined it, Christian ethics is ". . . The reflection upon the question, and its answer: What am I, a believer in Jesus Christ, and as a member of his Church,

---

[10]"Editorial Note," Anticipation, no. 1 (April 1970).

[11]Frankena, p. 4.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

to do?"[12] In order to answer that question, the past must be considered, if for no other reason than to determine one's historical faithfulness to the original witness of Jesus Christ. Moreover, as a member of the Church, a Christian cannot escape the past, because it is part of the internal history of the community.[13]

METHODOLOGY: SCOPE AND LIMITATIONS

The author shows in the methodology how to move from the premises (nature is good and humankind is good) through the modern situation of technology and technological power to form normative judgments that state and develop an attitude of reverence.

The basic methodology relates technology and stewardship and relates technological power and humility. The result is an attitude of reverence that reflects the general point made by Hans Jonas. His general point is that the "idea of creation provides a ground for reverence, and that from this reverence there issue definite ethical precepts in the context of our present situation."[14] This material is contained in two essays by

---

[12]Paul L. Lehmann, Ethics in a Christian Context (New York: Harper & Row, 1963), p. 25.

[13]H. Richard Niebuhr, The Meaning of Revelation (New York: Macmillan, 1941), p. 66.

[14]Jonas, p. 181.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Hans Jonas: "Contemporary Problems in Ethics From A Jewish Perspective" and "Technology and Responsibility: Reflections on the New Tasks of Ethics" in Philosophical Essays From Ancient Creed to Technological Man.

With an attitude of reverence, reason acts with heart. This is in contrast to one aspect of the crisis of modern man described by Hans Jonas:

> . . . Reason triumphant through science has destroyed the faith in revelation, without, however, replacing revelation in the office of guiding our ultimate choices.[15]

With an attitude of reverence the contemporary impasse in ethical theory due to three interrelated determinants of modern thought may be resolved:

> . . . two of them theoretical and the third practical: the modern concept of nature, the modern concept of man, and the fact of modern technology supported by both.[16]

This professional project synthesizes the two essays by Hans Jonas, specific essays on related critical issues and ethical concepts from the ecumencial inquiry, The Future of Man and Society in a World of Science-Based Technology, and specific concepts from Old Testament Anthropology. As an example of this synthesis, Jonas relates his categories of philosophical ethics to Old Testament anthropology. Ethical concepts are used as

---

[15]Ibid., p. 168.

[16]Ibid., p. 169.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

a basis for selection of specific Old Testament texts which have been described and interpreted by Hans Walter Wolff. This is another assumption to impose a modern category upon an ancient text. The writings of Genesis and Psalms are addressed to specific settings and do not properly fit into the definition of ethics as a deliberate reflection upon the moral life, or a science of human conduct, or an art of living well.[17] An example is the "will of a single action" in which persons created in God's image are stewards who hear, obey and answer God and who know God's creation.

RECENT RESEARCH

Before examining the supporting discussion for this thesis, attention should focus upon recent research into the subject matter. The ecumenical inquiry, entitled, The Future of Man and Society in a World of Science-Based Technology:

> . . . relates reflections on the vast technological changes of the present and the future, to the ongoing ecumenical debate about social justice and order. It is one of the principal ecumencial studies planned for the period 1970-75 . . .[18]

---

[17]John Mahon, "Liberation From Slavery in Early Christian Experience," (Unpublished Rel.D. dissertation, School of Theology at Claremont, 1974), p. 9.

[18]"Editorial Note," no. 1, p. 1.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

by the World Council of Churches (WCC). Papers written for the ecumenical inquiry are published in Anticipation.

The starting point for this ecumenical inquiry was a pronouncement from the World Conference on Church and Society which was held in Geneva, Switzerland under the auspices of the World Council of Churches (WCC) in July 1966. The pronouncement was that:

> The advent of the modern revolutions in science and technology . . . presents certain pressing issues which must be tackled by Christians. . . . We recommend that the Churches use their means of communication to present a clearer picture of what scientific technology really is, and to remind us constantly of the wider political and ethical universe within which it operates.[19]

Pressing issues are current trends in rising population, growing environmental pollution and intensifying world demands for limited natural resources. The Fourth Assembly at Uppsala sharpened this pronouncement and wrote it into a mandate to the Department on Church and Society. The Central Committee of the World Council of Churches launched the ecumenical inquiry at its meeting in August, 1969.

The ecumenical inquiry also identifies the degree of responsibility in technology and how it is or is not dealing with world problems of human poverty and resource

---

[19]Ibid.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

depletion. In his philosophical essays Hans Jonas discusses the problem of technology this way:

> . . . First, nature has been 'neutralized' with respect to value, then man himself. Now we shiver in the nakedness of a nihilism in which near-omnipotence is paired with near-emptiness, greatest capacity with knowing least what for. With the apocalyptic pregnancy of our actions, that very knowledge which we lack has become more urgently needed than at any other stage in the adventure of mankind.[20]

Then Jonas poses the question:

> It is a question whether without restoring the category of the sacred, the category must thoroughly destroyed by the scientific enlightenment, we can have an ethics able to cope with the extreme powers which we possess today and constantly increase and are almost compelled to use.[21]

Jonas distinguishes modern technology from previous, often indigenous technology by its scientific basis as follows:

> . . . Science has made nature 'fit,' cognitively and emotionally, for the kind of treatment that was eventually applied to it. Under its gaze the nature of things, reduced to the aimlessness of their atoms and causes, was left with no dignity of its own. But that which commands no reverence can be commanded, and, released from cosmic sacrosanctity, all things are for unlimited use. If there is nothing terminal in nature, no formation in its productions that fulfills an originative intention, then anything can be done with nature without violating its integrity, for there is no integrity to be violated in a nature conceived in terms of natural science alone--a nature neither created nor creative.[22]

---

[20]Jonas, p. 19.

[21]Ibid., pp. 19-20.

[22]Ibid., p. 173.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Hans Jonas discussed the critical vulnerability of nature and the biosphere of the planet as follows:

> Take for instance, as the first major change in the inherited picture, the critical vulnerability of nature to man's technological intervention--unsuspected before it began to show itself in damage already done. . . . It brings to light, through the effects, that the nature of human action has de facto changed, and that an object of an entirely new order--no less than the whole biosphere of the planet--has been added to what we must be responsible for because of our power over it.[23]

In contrast to modern technology, recent research of the Old Testament presents mining as celebrated in Job 28:1-10 as a triumph in human technology. "Men hollow out the innermost parts of the earth and illuminate them, hanging in the shafts on ropes, where not even the sharp eye of the hawk can penetrate, so that they may win the most costly precious metals and gems." In this text in Job, man's domination of the world is described with much artistry to make it clearer "that for all his searchings and investigations man cannot discover wisdom itself, the meaning implanted in the creation."[24]

Gerhard von Rad explains:

> . . . This wisdom is to be found somewhere in the world; it is there, but incapable of being grasped. . . . This 'wisdom,' this 'understanding'

---

[23]Ibid., p. 9.

[24]Hans Walter Wolff, Anthropology of the Old Testament (Philadelphia: Fortress Press, 1974), p. 227.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

> must, therefore, signify something like the 'meaning' implanted by God in creation, the divine mystery of creation. In this connection, one must bear in mind the fact that the poem (in Job) did not envisage something ideal so much as something real. God knows 'its place,' he has 'measured it out,' 'established it. . . .
>
> . . . It is not said that man is totally excluded from any perception of this wisdom. How, otherwise, could he speak about it? The line of thought in the poem is, rather, this. Wisdom, the order given to the world by God, is the most precious thing of all. . . . The world never reveals the mystery of its order. One can scarcely go further than this in the interpretation.25

Recent research is lacking in discussing the change in the nature of action which results in technological practices which affect the whole of the biosphere. A new ethic ought to include the role of stewardship which ought to change the nature of people's actions. Hans Walter Wolff in Anthropology of the Old Testament discusses how the world of persons is God's whole creation and that there is a special position of persons in the world, as they are created in God's image, and thus become stewards of the world.[26]

OUTLINE OF THE PROJECT

Now, without any further discussion, the support for the thesis of this professional project is presented.

---

[25]Gerhard von Rad, Wisdom in Israel (Nashville: Abingdon Press, 1972), p. 148.

[26]Wolff, p. 159.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 2 synthesizes discussion of ethical issues involving technology, people and the physical world and relates these issues to what is good for nature and people. Technology affects nature, people and the carrying capacity of our globe as simulated by Jørgen Randers. Chapter 2 will also formulate some normative judgments as will Chapter 3 after synthesizing ethical issues related to the over-production of nuclear power and its hazards to nature and people, technology as it affects human actions and technological power when it is used with humility. Two related essays in Anticipation XX, "Plan for an Ecumenical Hearing on the Risks and Potentialities of the Further Expansion of Nuclear Power Programs" and "Social Institutions and Nuclear Energy" by Alvin M. Weinberg are selected from the ecumenical study, The Future of Man and Society in a World of Science-Based Technology. Chapter 4 explores Hans Jonas' central thesis that the "idea of the creation provides a ground for reverence and that from this reverence there issues definite ethical percepts in the context of our present situation."[27] Chapter 5 summarizes and draws conclusions from the insights gained from this synthesis of ethical issues and concepts using Biblical interpretations of creation and stewardship.

---

[27]Jonas, p. 181.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 2

TECHNOLOGY AND STEWARDSHIP

In a ghetto in Los Angeles, a parent with her children stood in line to enroll them in the summer program at Wesley Social Service Center. She pleaded that her children might have the privilege of food, the trip to the beach, the artistic craft material that they could take home, and the Bible teachings. I myself have walked the streets of this ghetto as a community worker for the United Methodist Church during the summer of 1973. In 1966, during the Watts riots, I drove my car around road blocks in getting from the airport to the mission control center for our space mission. Now seven years later at the community center, I breathed the same air that they breathed. I choked on the same smog. I cared for their children when they got sick from the smog. I lived in a ghetto apartment with a family. At the Center, I handed to some of these children the only food that they would eat that day. I saw the freeways that confine their living area and that require well-tuned cars and a higher standard of living than that which they have. I drove these children on the Church bus out of the ghetto to the ocean beach ten miles from their homes to swim there for the first time.

The people of the ghetto struggle against its confinement, its hot humid days, its idleness, and its

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

unkept and worn condition. I often walked past a group of fifty rough and angry men standing on a street corner just waiting for jobs that did not exist for them. I was not afraid because I helped their children have food, have summer recreation and develop a Biblical faith that would raise their vision above the streets of the ghetto so that they could persevere. Reverence for life is what compelled me to walk the streets of the ghetto even when it was no longer a priority with the Church.

Should clean air exist only at the ocean beach, or jobs exist only for the privileged? What kind of obligation do we have to nature and humanity? We should not have to have our food for the day handed to us only at a summer day camp or in a public assistance line! The first obligation to preserve nature and to feed people begins with each person and extends to humanity as a whole. Some parents of the ghetto care for their children. They try to give them clean air and a healthy environment.

Stewardship could make the difference. Life is essentially the gift of God. The earth is not created by us. God created the earth. The earth is a gift to us. Stewardship is the receiving of this gift with a sense of trust and using this gift wisely with a sense of trust. When humankind appeared upon the earth, the air was clean. The earth was covered with green and growing plants. The

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

streams were clear and pure. One could drink from them without fear of contamination. The animals were sufficient to supply food and to maintain nature's balance.

Stewardship applies to each person in his/her care of self and of others and his/her care or abuse of nature. Hans Jonas declares that "for such a role of stewardship no previous ethics has prepared us. . . ."[1] The causes of poverty and exploitation of a large section of humankind and the threats to the environment are not always apparent. The results of poverty and exploitation are as Vachel Lindsay's poem puts it:

> Let not young souls be smothered out before
> They do quaint deeds and fully flaunt their pride.
> It is the world's one crime its babes grow dull,
> Its poor are ox-like, limp and leaden-eyed.
>
> Not that they starve, but starve so dreamlessly,
> Not that they sow, but that they seldom reap,
> Not that they serve, but have no gods to serve,
> Not that they die, but that they die like sheep.[2]

We have indicated that rising population, growing environmental pollution and intensifying world demands for limited resources are part of the cause of poverty and exploitation.

---

[1]Hans Jonas, Philosophical Essays (Englewood Cliffs: Prentice-Hall, 1974), p. 10.

[2]Gerald De Witt Sanders and John Herbert Nelson (eds.) Chief Modern Poets of England and America (New York: Macmillan, 1929), p. 489.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Also, modern technology is the cause of much pollution. People build factories, cars and freeways. The factories and the cars emit gases. The air becomes unclean. Some people, who have the financial means with the inside track on capital and investment, build independent air controlled environments using more technology. Thus technology assumes its ethical significance:

> . . . by the central place it now occupies in the human purpose. Its cumulative creation, the expanding artificial environment, continuously, reinforces the particular power in man that created it, by compelling their increasing inventive employment in its management and further advance, and by rewarding them with additional success--which only adds to the relentless claim.[3]

NATURE

In nature, we see physical growth,
In nature, we see irreversibility.
Yet we see people affecting nature.

He has showed you, O man, what is good.[4]
Relate to nature.
Relate to God as its creator.
Seek good for nature.

Stewardship includes appreciation and care of the gift of nature and the gift of humanity. Modern technology has threatened our stewardship with its techno-

---

[3]Jonas, p. 11.

[4]Bible, The Oxford Annotated Bible Revised Standard Version (New York: Oxford University Press, 1962), p. 1129.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

logical practices. Without stewardship which arises from true reverence for the gifts of God, life as we know it on this earth will not last more than a few decades.

On the global scale, tremendous growth of population gives rise to demands for food and energy and to the emission of pollution. "Because our environment--the earth--is finite, physical growth cannot continue indefinitely." This is the main thesis of Jørgen Randers in a world model simulation.[5] A network of interrelationships links up population growth, capital accumulation, use of resources, technology, etc., as shown in Figure 1, in a world model simulation that Randers ran on a computer as diagrammed in Figure 2. From simulation data Randers sees that the tremendous "growth of population and capital is an important cause of all global problems--unemployment, starvation, disease, pollution, the threat of warfare, and resource shortages."[6]

But the prediction of the future, made by Randers, is that "we are faced with the fact that the continuation of current growth practices will inevitably lead us to some sort of collapse . . ."[7] in our finite environment, the

---

[5]Jørgen Randers, "The Carrying Capacity of Our Global Environment--A Look at the Ethical Alternatives," Anticipation, no. 8 (September 1971), 2.

[6]Ibid., pp. 2-6a.

[7]Ibid., p. 7.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

PLEASE NOTE:

Print on some pages is small and indistinct. Filmed in the best possible way.

UNIVERSITY MICROFILMS.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

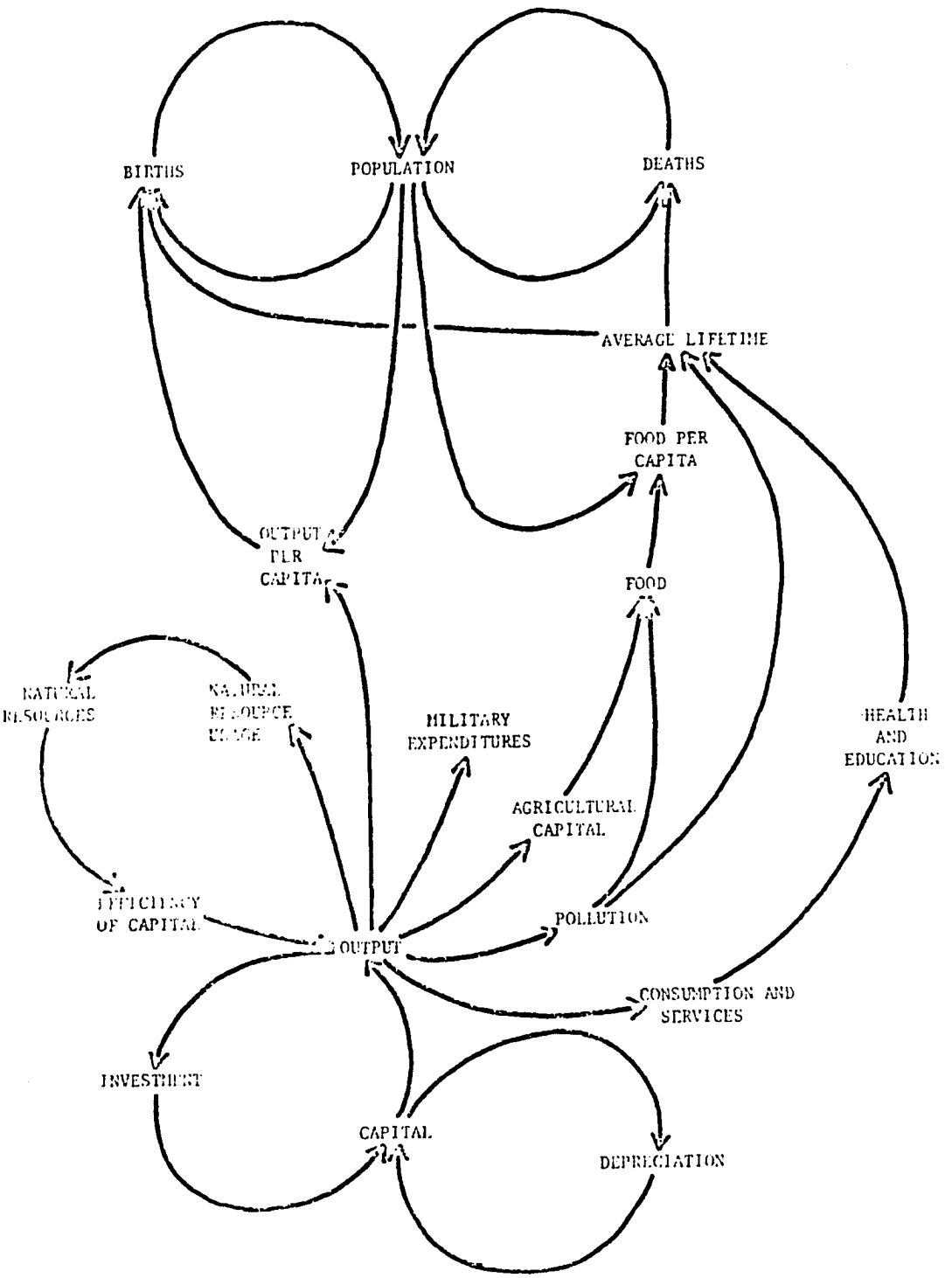

Figure 1. Basic Interactions Between Population Growth and Capital Accumulation

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

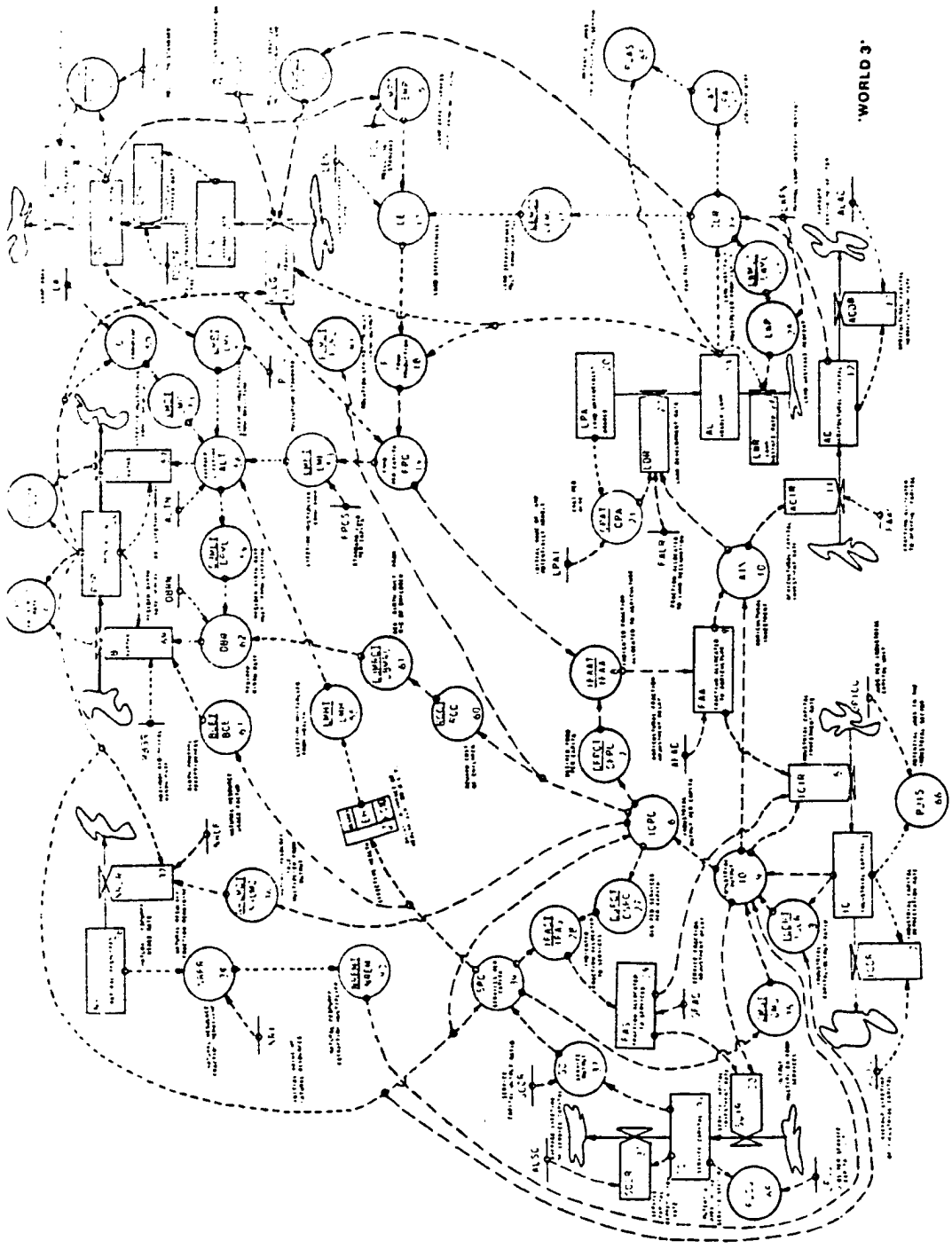

Figure 2. DYNAMO flow diagram for WORLD model.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

world. This prediction was supported by data from his world model simulation. Randers, a Norwegian physicist, working at the Massachusetts Institute of Technology, presented his thesis, including data, and the basis for an ethical action which would not allow the collapse of our environment and would do something about the "approaching collision between our growing societies and the physical limits of the earth."[8] This presentation was made at the meeting of the Working Committee on Church and Society, World Council of Churches, June 1971. Responses were made to his paper and dealt with the simplicity and assumptions of the numerical techniques used in his computer simulation. C. T. Kurien, head of the Department of Economics at Madras Christian College, comments that the world model is an abstract view of the physical world without reference to the way in which human beings are organized into societies and nations and without reference to the decision-making process.[9]

The limits for the survival of life and nature are defined by a carrying capacity of our globe which in turn is partially defined by the "agricultural land," "heat release" of the earth caused by consistent energy

---

[8]Ibid., p. 10.

[9]C. T. Kurien, "Comments by," Anticipation, no. 8 (September 1971), 16.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

consumption and "pollution absorption."[10] If we have reverence for life and for nature, we will not exceed the limits for survival on this earth now or in the future. Our stewardship means that we care for life and nature before it reaches the limit for survival; i.e., before it is destroyed. We have disrupted the condition of nature.

How do we secure a reverence for all people and for all nature? What is the intent of God as we try to discover it: that everyone must have fresh air and food? Is it the will of God that some people have two houses, three cars and vacations in Hawaii while other people starve and choke. Hans Jonas restates the Biblical proposition that a person is good and that nature is part of our human trust when he says:

> It is at least not senseless anymore to ask whether the condition of extra-human nature, the biosphere as a whole and in its parts, now subject to our power, has become a human trust and has something of a moral claim on us. . . . If this were the case it would require quite some rethinking in basic principles of ethics. It would mean to seek not only the human good, but also the good of things extra-human, that is, to extend the recognition of 'ends in themselves' beyond the sphere of man and make the human good include the care for them.[11]

In securing reverence, we must first recognize the goodness and the worth of both people and nature.

Both people and nature are involved in these inter-relationships that Jonas describes. As we have read in

---

[10]Randers, pp. 2-5.

[11]Jonas, p. 10.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the scripture, each person is created in God's image and thus becomes a steward of nature, Genesis 1:26-27:[12]

> Then God said, "Let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth.
> So God created man in his own image, in the image of God he created him; male and female he created them.

Hans Walter Wolff outlines specifically how each person is related to nature as follows:

> . . . It is always God's creatures with whom man is put in contact. When man enters into relationship to things of the world, whether in his day's work, or in his meals, or in his discoveries, he also enters objectively into relationship with God, as their Creator, who has apportioned these things to him. Accordingly the relation of correspondence, to which his destiny as God's image points, is also seen in the fact that man has to cope in the world with the very things that God has created.[13]

We cope with nature. From the animals and the plants, we eat food, and when it is good, we live. We breathe the air, and when it is good we live. We drink the water, and when it is good we live. These animals, plants, air and water are the gifts of God. We become aware that our dominion is over nature. We are stewards of nature. We influence nature whether or not the food and the air, and the water are good. Our lives depend upon the goodness

---

[12]Bible, p. 2.

[13]Hans Walter Wolff, Anthropology of the Old Testament (Philadelphia: Fortress Press, 1974), p. 160.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

of this nature. We, as stewards, affect the goodness of nature. Future life depends upon our life and the preservation of our life. We realize that God creates a nature that is good and that as stewards we have a moral obligation to preserve it.

Randers' model, although an abstract view, does show trends and effects of modern technological practice. My position as a former technologist is that technological practices are accumulating into a danger zone, that we have the technological know how either to change these practices or stop some of them altogether. I know how fast technological practice can escalate. The freeway and the cars that now can travel greater distance using the freeway have created new living patterns and have created the smog problem. The movement of cars on the freeway is one of the classical problems in the mathematics of statistical analysis. The great numbers of moving cars and their impact on society were predicted long before freeways were built. No one believed that many more cars would travel the freeways although it was predicted. Now the storage of nuclear waste is increasing. A natural resource like oil is depleting. Both nuclear waste and the oil resource are reaching a danger zone at the same time that we have an engineering community which could develop other technological practices. Most technologists are working where the return on the capital is at its best. Are we over-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

looking two of the basic controlling factors in technology: capital and investment? Is it a lack of reverence for one of our earth's resources? This escalation in technological practice is what made me, a former technologist, look at ethical choices. I do not feel that it is the intent of the technologist that his technological creation be escalated out of reason. Some corporations like Exxon are looking for new energy sources.

NORMATIVE JUDGMENT

My position is that the continuation of the current growth practices is not in line with stewardship as we care for nature and as we believe that nature is good. As stewards we must cope with these technological practices so that the practices do not endanger nature. The Biblical scripture, as previously cited from the creation in Genesis 1, contains the answer for ethical action now. This basis for ethical action is different from Randers' basis for ethical action. I will present my judgment for ethical action which I think ought to be incumbent on other people which will be substantiated by the interpretation of the Biblical scripture from the creation in Genesis 1 and by the interpretation of the influence of technological practices made by Hans Jonas.

Basic interactions between population growth and capital accumulation become the dominating world problems.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

One reason for the accumulation of their effects is technological practices which set up "cause-effect trains"[14] upon the earth. People implement practices through the use of capital and investment. Technological practices increase usage of "natural resources, military expenditures, agricultural capital, pollution, consumption and services, health and education."[15] One oil well becomes one of thousands throughout the world in the depletion of a natural resource. One prototype missile becomes one of thousands in a world arsenal. One car becomes one of tens-of-thousands of cars that create the smog problem in a city. These technological practices are spread throughout the globe with each practice occurring at its own time and place but contributing to an overall effect such as pollution. Using his analytic methods, Randers comes to this conclusion:

> Most global problems have important roots in this simple set of interactions. . . .
> . . . . . .
> . . . no mechanism currently existent that will bring the present growth to a smooth stop when we reach the maximum level consistent with our finite environment.
> . . . growth will not stop . . . instead of an orderly transition to some feasible state we will overshoot the physical limitations and then be forced into a traumatic decline back down to some level of population and industrialization which can be supported by our physical environment--which by then will be sorely depleted.[16]

---

[14]Jonas, p. 9. [15]Randers, p. 6a. [16]Ibid., p. 7.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

"The cumulative self-propagation of technological change of the world"[17] moves us into an unprecedented situation, i.e., we exceed the absorptive capacity for pollution. The result of the situation would affect humankind:

> . . . in death rates due to impurities in food, water and air, decreases in crops and fish catches due to similar reductions in plant and animal life.[18]

With this death rate, humankind becomes the object of a reshaping techne in a traumatic decline back down to some level of population which can be supported by our physical environment. Thus the ends in themselves are now beyond the sphere of man as he is being affected by nature.[19]

What can we do? It is important to realize that our answer to this question is completely dependent on our choice of what is good? We have to live now in order that people will live 200 years from now. Our lives depend upon our care of nature each time that we come in contact with nature. But we need to consider also whether thousands of oil wells depleting a natural resource, thousands of missiles creating a world arsenal, thousands of cars using gasoline creating a smog problem is good. Are these technological creations good for a person? Are these technological creations good for society? Are

---

[17]Jonas, p. 9. [18]Randers, p. 7. [19]Jonas, p. 6.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

these technological creations good for the world? Are these technological creations good for the future 200 years from now? These questions become overwhelmingly important. These questions should be considered when we first drill the oil well, when we first build the prototype missile and when we first design and drive the car. As these technological problems escalate, we need to look with a sharper eye at their effect and at our actions. It is a choice of what is good rather than just profitable. Jonas states that "all this would have to be co-intended in the will of the single action if this is to be a morally responsible one."[20] Then the cumulative actions of many persons in the world and of many persons designing and implementing technological practices must be co-intended. The criteria for all actions becomes obeying God, the creator, so that such is not just an abstraction, but our cumulative actions hook up reason with creation. "Knowledge must be commensurate with the causal scale of our action."[21]

How do we will a single action? God addresses a person in the scripture that was previously cited from the creation in Genesis 1. In relating to God, as our creator, we "hear, obey and answer God"[22] about our rela-

---

[20]Ibid., p. 10. [21]Ibid., p. 10. [22]Wolff, p. 160.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

tionship to nature and how we cope with nature. How do we understand ourselves and the will of God in technological practices? Are we serving the purposes of God in order that all humanity will benefit? In obeying God, we can choose actions that preserve nature. I believe that it is God's purpose not only to preserve each person, but nature as well. Therefore, we become morally responsible in the preservation of nature at the time we act, at the time we plan our actions.

"If we attempt to continue growth by removing one set of pressures--for instance, by introducing complete pollution control--we alleviate the situation only until we encounter the next constraint."[23] This shows that we need all actions "co-intended in the will of a single action."[24] Only God, the Creator, knows this single action within his creation. Although each person considers all interactions that a person is capable of understanding, the will of each of our actions will be dependent upon our hearing, obeying and answering God as the creator.

The only answer for humanity in today's technological environment is to act out of reverence for life, to practice stewardship and to direct technology into

---

[23]Randers, p. 7.

[24]Jonas, p. 10.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

life saving and giving efforts so that we will not exhaust the resources of God's planet. Stewardship is the responsibility of a person, groups, corporations. Stewardship is the responsibility of everyone.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 3

TECHNOLOGY, HUMILITY AND WISDOM

The crystal catches the light and it sparkles. The light is refracted and we see colors of the rainbow. We value the beauty of the crystal and we seek it out even as in the Book of Job where the hunt is for precious gems which contain crystals. We study the formation of the crystal, its structure, its impurities, and try to see how it is created. Through statistical mechanics we know the probable distances which bind those molecules within the crystalline structures and which give its strength. Then we start to break it down. We know its neutrons, protons and electrons. We measure each particle in high speed accelerators. The target, which may be any substance that will emit particles, is surrounded by walls of cement that protect people from radiation. The particles are accelerated using intense magnetic fields. They hit the target and others are emitted into an emulsive substance. I have watched other physicists control the experiment at the cyclotron. We control the nuclear process of acceleration remotely outside the cement chamber using dials and meters. Later, we measure the track of the emitted particles in the pattern of an emulsion that we view through a powerful microscope.

In the numbers, in the distances of the track, we may forget its original beauty that we saw in the crystal-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

line structure, but we may see the beauty of the eternal order. We are now removed from contact so that we can no longer touch it, see its beauty, but we sense the power that comes from within that nucleus when we emit those particles. In sensing this power, we either lose our perspective or we gain a deeper reverence for the crystalline structure and for the eternal order that the mathematical formulae describe. The physicist did not establish that order. He is only discovering what it is. The creation is there and still unknown.

How can we use this nuclear power? If we lose our perspective, then we develop our power regardless of its effects on human life and the planet. We interrupt the natural process having lost our sense of reverence. We express reverence when we use technological power to enhance human life and the planetary environment.

Today's human actions with modern technological power have produced risks and potentialities in modern life especially in the further expansion of nuclear power. This calls for the use of nuclear power with utmost humility and wisdom--a sense of reverence--because no one, as of now at least, has complete knowledge to make crucial decisions involving nuclear power.

Already, there is no question that present and future commitments to nuclear power constitute an overcommitment. Dr. Alvin Weinberg, even though probably one

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

of the leading advocates of nuclear power systems, having for many years been Director of the Oak Ridge National Laboratory in Tennessee, United States of America, delineates the world's over-commitment to nuclear power.

> Today the United States is committed to over 100 x 10^6 kilowatts of nuclear power, and the rest of the world to an equal amount. Rather plausible estimates suggest that by 2000 the United States may be generating electricity at a rate of 1000 x 10^6 kilowatts with nuclear reactors. Much more speculative estimates visualize an ultimate world of 15 billion people, living at something like the current United States standards: nuclear fission might then generate power at the rate of some 300 x 10^9 kilowatts of heat, which represents one-four hundreds of the flux of solar energy absorbed and reradiated by the earth.[1]

This overcommitment to nuclear power with its hazard of radioactive waste causes the ethical dilemma. This commitment puts demands on society, as Dr. Weinberg explains, as a Faustian bargain:

> But the price that we demand of society for this magical energy source is both a vigilance and a longevity of our social institutions that we are quite unaccustomed to. In a way, all of this was anticipated during the old debates over nuclear power. As matters turned out, nuclear weapons have stabilized at least the relations between superpowers. The prospects of an allout Third World War seems to recede. In exchange for this atomic peace we have had to manage and control nuclear weapons. In a sense, we have established a military inadvertent use of nuclear weapons, which maintains what a priori seems to be a precarious balance between readiness to go to war and vigilance against human errors that would precipitate wars.[2]

---

[1]Alvin M. Weinberg, "Social Institutions and Nuclear Energy," Anticipation, no. 20 (May 1975), 9.

[2]Ibid., p. 13.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Just as this is talking about the stabilizing effect on the relation of superpowers, we are talking about the need to stabilize energy. The nuclear community is aware of the implications to society that nuclear energy demands:

> . . . When nuclear energy was small and experimental and unimportant, the intricate moral and institutional demands of a full commitment to it could be ignored or not taken seriously. Now that nuclear energy is on the verge of becoming our dominant form of energy, such questions as the adequacy of human institution to deal with this marvellous new kind of fire must be asked, and answered, soberly and responsibly.[3]

The use of nuclear power opens up consequences, such as the disposal of the lethal nuclear waste products which effect the lives of future generations, demanding moral choices from persons and institutions. As the report of the World Council of Churches points out, the issue of nuclear power becomes more urgent because:

> A number of factors have converged to increase the urgency of broader public examination of consequences of the expansion of nuclear power. The oil embargo of 1973, the energy crisis linked with the rapid rise in the price of oil, and the possible exhaustion of fossil fuels have obliged many nations to press the search for alternative sources of energy, leading governments to move towards a more rapid development of nuclear power programs than envisaged earlier.[4]

Because the development of nuclear power is increasing, the risk of contact with radioactive material

---

[3]Ibid., p. 9.

[4]"Plan for an Ecumenical Hearing on the Risks and Potentialities of the Further Expansion of Nuclear Power Programs," Anticipation, no. 20 (May 1975), 4.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

becomes even more important. From our manipulation of the nucleus there is fission or fusion of nuclear particles and the emission of radioactive particles. Radioactive materials effect people's lives and can result in their death. The effects that obsolete nuclear reactor systems and prolonged storage of radioactive waste have on people give rise to the ethical controversy about how nuclear power should be used.

It is an ethical or moral choice to create nuclear power in the face of the consequences to future generations. Nuclear power for this generation and this society is held over against reverence for life in future generations. The consequences of our actions are incalculable and irreversible because the nuclear waste still maintains its radioactivity, thus the possibility of making parts of the planet uninhabitable.

Out of the development of modern technological power and the ethical and moral choices involved, the nature of human action has changed. Thus a change in human ethics is mandatory as Hans Jonas bears out in his quotation:

> . . . since ethics is concerned with action, it should follow that the changed nature of human actions calls for a change in ethics as well: this not merely in the sense that new objects of action have added . . ., but in the more radical sense that the qualitatively novel nature of certain of our actions has opened up a whole new dimension of ethical

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

> relevance for which there is no precedent in the standards and canons of traditional ethics.[5]

In discovering the new ethic, we need to go back to an ancient principle in Leviticus 19:18b:

> Love thy neighbor as thyself.[6]

This is an ancient basic principle that needs to be recognized again in a new system of ethics involving technological power. The effect on the life of unborn children of our future generations which results from our overcommitment to and escalation of nuclear power as a buildup of radioactive waste is in contrast to this ancient principle. We are not now talking primarily about the neighbor of today, but about the neighbor of the future. Is not this concern for persons of the future still a matter of the heart? This ancient basic principle is expressed from Hosea 6:6:

> For I desire steadfast love and not sacrifice
> the knowledge of God, rather than burnt offerings.[7]

---

[5]Hans Jonas, Philosophical Essays (Englewood Cliffs: Prentice-Hall, 1974), pp. 3-4.

[6]Bible, The Oxford Annotated Bible Revised Standard Version (New York: Oxford University Press, 1962), p. 147; See also Hans Walter Wolff, Anthropology of the Old Testament (Philadelphia: Fortress Press, 1974), p. 225.

[7]Bible, p. 1093; see also Wolff, pp. 225, 255.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

God requires of us both reason and love in our actions toward him. "What does it mean to love God with all our hearts and to do good out of love for Him?"[8] It means as in Leviticus 19:18b:

> Love thy neighbor as thyself.[9]

People today have freedom to choose how to act with nuclear power. If our actions are to be moral, we must choose to preserve our neighbor of the future.

TECHNOLOGICAL POWER AND HUMILITY

The physicist
Observes the order of the atomic structure.
Uses complex mathematical equations to define the motion.
Understands man's complicated solution to atomic structure.

In reverence, the physicist
Realizes the unknown source of atomic creation.
Appreciates the care, the order, and the simplicity of the atom.

The technologist using technological power
Bombards the nucleus with particles.
Measures the particles of emission.
Predicts the energy of the reaction, fusion, fission.

In humility, the technologist
Realizes God's creation.
Realizes this power within the nucleus.
Acts modestly with that power.

---

[8]Albert Schweitzer, Reverence for Life (New York: Harper & Row, 1966), p. 110.

[9]Bible, p. 147.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Because of the ethical dilemma caused by nuclear power, the Central Committee of the World Council of Churches requested "the officers and staff of Church and Society to make a preliminary assessment of the risks and potentialities of the expansion of nuclear power."[10] A staff person from the Division of Nuclear Safety and Environmental Protection, International Atomic Energy Agency, presented the risk assessment which used a "public acceptability criteria-based on comparison with other risks of a transient kind" and introduced "permanent damage to the biosphere as a new order of risk."[11] A preliminary assessment involves "an evaluation and synthesis of divergent views that can now be identified in many countries."[12] The wholly positive view stresses nuclear salesmanship, no reliable alternatives to other energy sources and the future potential of nuclear power subject to the necessary implementation of international nuclear safeguards under the terms of the Non-Proliferation Treaty.[13] The extreme position of a wholly negative view points out the moral obligation on the operators to secure all loopholes in the process of designing and engineering these systems, the development

---

[10]"Plan for an Ecumenical Hearing . . .," p. 4.

[11]Ibid., p. 7. [12]Ibid., p. 4. [13]Ibid., p. 7.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

programs under direct Governmental control, the inadequacy of international machinery for administering nuclear safeguards, the overall energy costs in a rapidly expanding nuclear program, and the viewpoint in line with technological opposition. Those with the wholly negative view contend that alternative sources of energy will be developed, thereby replacing the need for widely proliferating nuclear power programs."[14]

But in these divergent views of nuclear power, we are using reason only. Reductionism, which is a mode of thinking, uses reason only, not the matter of the heart acting with reason. The author agrees with Albert Schweitzer when he says that "reason and heart must act together if a true morality is to be established."[15] The particularly crucial areas of the nuclear power argument where reductionism is used, involve both society and the individual person. The responsibility for correcting the consequences involving radioactive waste is passed on to future institutions and generations and is not dealt with by the people who have the beginning knowledge of the process.

The crucial areas to the individual person involved in the technological process of nuclear power are:

---

[14]Ibid., p. 5.

[15]Schweitzer, p. 112.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

(1) the isolation of the disciplines of the theoretical physicists who develop the mathematical predictions, of the experimental physicists who measure and calculate high energy levels at laboratories usually in connection with Universities, and the technologists who apply nuclear theory in industry for the generation of power; and (2) secrecy which involves the securing of information from the physicists and the technologist who are most knowledgeable about the technological process where great potential power is involved and where great risk is involved. Each of these fragments the total knowledge available to society today. It is evident then that no one has complete knowledge to make crucial decisions involving nuclear power. Thus nuclear power becomes society's problem involving the prognosis for health of future generations and the restriction of a person's freedom. If the prognosis is for health, then particular action is heavily justified in attaining health. How should we act?

But there is a principle upon which we can make decisions. We need to restore the "love of God" and the "love of neighbor" with reason. This will restore a "sense of transcendence"[16] because reason and heart work together in relationship to God.

---

[16]Jonas, p. 176.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

> For when reason really reaches the core of the matter, it ceases to be cold reason, whether it wants to or not, and begins to speak with the melody of the heart. And the heart, when it tries to fathom itself, discovers that its realm overlaps the realm of reason.[17]

"Explore the basic principle of goodness from the heart's point of view and from reason's point of view and see when both meet."[18]

From reason's point of view, we search for the mystery of the universe. From the heart's point of view, we find "love of God" and "love of neighbor." Let me tell you more about my own experience as a data controller during one of the space missions. In Chapter 1, the sense of reverence was described when I viewed the earth beyond the horizon of the moon using modern technology in optics and photography. Now let me share more of this experience to illustrate humility that I gained when I realized how finite my knowledge was compared to the greatness and dependability of the universe and how fragile human technological inventions are.

The objective of this space mission was to photograph the moon in detail by the unmanned spacecraft orbiting around and around the moon continuously for one month. The spacecraft was launched from Cape Kennedy atop the rocket, orbited around earth and started on its

---

[17]Schweitzer, p. 112.

[18]Ibid.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

translunar trajectory. The space team was stationed at five positions around earth. Almost immediately, we realized that our spacecraft could not focus on the distant star, Canopus. The star is like a compass to give direction to the spacecraft. We focused on the moon instead, but this worked only for one day. Then we focused on earth and this focus had to be constantly adjusted.

As the spacecraft neared the moon, we prepared for the first orbit of the moon. We did not know exactly what its gravitational pull will be. There was the possibility of either going into orbit or just "flying right by" the moon if we did not guide the craft correctly. In the last minutes we had sent commands to the spacecraft telling it how to orbit, but the commands got out of order. Everyone was excited, in fact we almost panicked. The spacecraft went behind the moon. At that point it was in earth-set which means that we couldn't see it or pick up telemetry data from it because the moon was between the transmission line of the spacecraft and the earth. The space team waited for one-half hour. In this half hour we realized that we had done many things wrong during the first three days of this mission although some of us had prepared six years for this flight. We realized that we have no control over this situation and that the knowledge

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

of one of the greatest assembled groups of engineering talent throughout the earth is surpassed and is finite when compared to the wisdom of the creator of this universe. We were only carefully conducting a technological experiment in this universe. We realized how fragile our technological invention is and how fragile life is even though this spacecraft was not manned.

The half hour passed and now time came for the spacecraft; if still in orbit, to come around the other side of the moon. We picked up the spacecraft on our radars and telemetry. It had made a successful orbit!

I am humbled by the greatness, the structure and the dependability of the universe, God's creation. This is God's creation in all its glory. As the technologist relates to God, the source of the universe and of the atoms upon which he/she is working, he/she becomes humble in attitude and action. This flight affected each one of us on the space team. Some of my engineering colleagues may not confess to a belief in God, but they know that there is more to this universe than man's manipulation. God is made known to the technologists through the "revelation of works"[19] within the creation. Each person experiences his/her own revelation of God's works.

---

[19]Hans Walter Wolff, Hosea (Philadelphia: Fortress Press, 1974), p. 120.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The scripture from Hosea substantiates this expression of humility and we read with new meaning:

> For I desire steadfast love and not sacrifice,
> the knowledge of God, rather than burnt offerings.[20]

In this "steadfast love," there is a faithful covenantal relationship to God. The "knowledge of God" shows that this relationship to, is communion with God. God is active. God gives and speaks. This is the foundation of everything. God's steadfast love makes clear that God can be "known" from the revelation of his word and the "revelation of his works."[21]

This is what humility is. We do not use our technological powers to destroy future life and creation. We use our "knowledge" to enhance life and our environment by choosing safer energy sources. Micah 6:8 can put it in the concisest terms:

> He has showed you, O man, what is good and what Yahweh requires of you: nought but to do justice, and to love kindness, and to walk heedfully with your God.[22]

NORMATIVE JUDGMENTS

We as people develop technological power. We have developed an overcommitment to nuclear power. The hazards of nuclear power affect the lives of people today and in

---

[20]Bible, p. 1093.

[21]Wolff, p. 120.

[22]Jonas, p. 179; see also Hans Walter Wolff, Anthropology of the Old Testament (Philadelphia: Fortress Press, 1974), p. 225.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the future. We ought to act with humility (Micah 6:8) derived from knowledge of God and our loyalty to God (Hosea 6:6).

We ought to recognize the urgency of the issue of the expansion of nuclear power. As ministers, we ought to state the ethical issue with its consequences to future generations.

We ought to know that God requires of us both reason and love in our actions; Hosea 6:6. As ministers, we ought to preach that reason and heart must act together if a true morality is to be established. Man internalizes his belief in his own creation by confessing that God created him like Job, having a destiny to love and to overcome hate (Micah 6:8), and having similar behavior to one's fellow men (Hosea 6:6) through knowledge of God and loyalty to God (Wolff).

We ought to recognize that reason acting alone, without sufficient knowledge and without heart causes the ethical dilemma. As ministers, we ought to recognize that technologists have some sense of mystery about the minuteness of the structure of the atoms and about the expansiveness of universe.

We ought to tie the "revelation of works" within the creation to the relationship between God and the technologists. God's steadfast love makes clear that God can be "known" from the revelation of his word and the reve-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

lation of his works. As ministers we ought to tie in the revelation of the creation.

As ministers, we ought to illustrate man's concept of creation in contemporary terms which involves the nucleus of atoms that a creator has created with care and order and the expansiveness of the universe in that there is order in the universe and an unknown beyond man's intellectual grasp.

As ministers, we ought to illustrate how our vision is internalized by confessing the creation and having a vision of the Eternal. We ought to acknowledge that scientists are people who are capable of believing in God and of tying their vision of the eternal to its scriptural base by working through how knowledge of God and loyalty to God relate to humility in our choices of actions.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 4

PRAISE AND REVERENCE

In summary of the previous chapter,

We know God through the revelation of his works:
The creation of atoms, the creation of the universe,
The creation of a person, the creation of societies.

We know God through the revelation of his word,
"For I desire steadfast love and not sacrifice, the knowledge of God, rather than burnt offerings."[1]
"You shall love your neighbor as yourself."[2]

The unfathomable mystery of life still remains. God through his steadfast love shows us how reason and love act together.

Using modern technology, we now explore the heavens, the moon and the stars. A modern example of power is the Saturn 5 rocket which is used to boost the manned spacecraft Apollo into orbit around earth before the astronauts' voyage to the moon. The Saturn 5 rocket uses a cluster of five single rockets so that the power to lift off the spacecraft into earth orbit is gained. We use this powerful rocket to master earth, but then the spacecraft moves into its translunar trajectory. The

---

[1]Bible, The Oxford Annotated Bible Revised Standard Version (New York: Oxford University Press, 1963), p. 1093.

[2]Ibid., p. 147.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

power that was used to conquer earth becomes insignificant and we find ourselves in the vast universe where the power of the rocket is no longer used and where we are dependent upon a new source of power from God's universe.

I realize how minute I am compared to God's universe, how insignificant our technological creation of power is compared to the power within God's creation and how God's creation always offers a solution or safe way in our exploration. The use of a way that does not destroy is part of my stewardship.

The choice is before us of what we will do with this earth-orbiting capability. There are many possibilities: either the translunar trajectory and exploration or the re-entry back into the earth's atmosphere; either the continuous orbiting around earth and worldwide communications or the continuous orbiting around earth and surveillance of other persons. The choice is before us either to enhance everyone's knowledge of the creation through communication systems or to spy and to plan destruction. The only solution to this choice is stewardship without destruction which is based on praise and reverence.

Technological power can be used to harm and to threaten people. This is a lack of reverence. There are basic issues about which people make choices. People can

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

use powerful rockets to put in orbit around earth surveillance stations which threaten other people's freedom. People can use nuclear power without proper safeguards for the preservation of human life and the environment. An inhuman person is in the immediate vicinity.

As Dr. Alvin Weinberg continues to say in his paper, the unknown possibilities and the unprecedented situation of nuclear power are:

> . . . reactor safety, waste disposal, transport of radioactive materials--are complex matters about which little can be said with absolute certainty. When we say that the probability of a serious reactor incident is perhaps 10^{-8} or even 10^{-4} per reactor per year, or that the failure of all safety rods simultaneously is incredible, we are speaking of matters that simply do not admit of the same order of scientific certainty as when we say it is incredible for heat to flow against a temperature gradient or for a perpetuum mobile to be built. . . . these matters have trans-scientific elements. We claim to be responsible technologists, and as responsible technologists we give as our judgement that these probabilities are extremely--vanishingly--small, but we can never represent these things as certainties. The society must then make the choice, and this is a choice that we nuclear people cannot dictate. We can only participate in making it. Is mankind prepared to exert the eternal vigilance needed to ensure proper and safe operation of its nuclear energy system? This admittedly is a significant commitment that we ask of society. What we offer in return, an all but infinite source of relatively cheap and clean energy, seems to me to be well worth the price.[3]

---

[3]Alvin M. Weinberg, "Social Institutions and Nuclear Energy," Anticipation, no. 20 (May 1975), 14.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Even though Dr. Weinberg is a major proponent of nuclear energy, he has to admit that there are risks. Weinberg says that the benefits are worth the risks, but society must choose whether it will pay the price. This current situation involves the probability of death, one out of ten thousand chances of having a serious reactor incident with each reactor in each year. This low probability further depends upon a constant vigilance over nuclear activity. This constant vigilance is demanded of society today and in the future. Society does not have complete knowledge about nuclear energy.

Is not there a need for an eternal vigilance? The vigilance of society is not eternal. The risks are too great to place over against the priceless gifts of God in nature and in human life. The solution is reverence for nature and persons and is praise of God, the creator.

REVERENCE FOR A PERSON, PRAISE OF GOD

The highest reverence is to give thanks for everything or to praise God. Reverence comes when we understand our stewardship and when we have been humbled. Then by trusting and obeying God, we express in fact what is the highest reverence. The trust is in the creator that he will provide us energy sources without the need to deplete our oil resources and without the need to threaten human life and the environment with radioactive waste or

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

with reactor incident so that our lives will be enhanced and sustained. The trust is in that person in the ghetto that he/she has the capability to work, and to enhance not only in his/her life but our lives and environment. The trust is in people who use reason with love so that we do not need to threaten others.

In trusting God we also obey his commandment:

You shall not kill.[4]

Albert Schweitzer exclaims that this is reverence for life expressed in negative terms.[5]

Then we are confronted with the choice of how we use our personal knowledge, our technological practices, and our technological power. Each technological practice increases someone's personal knowledge. Each technological power increases someone's power. The criteria for the choice is God's commandment against killing of human beings. When offered jobs on destructive systems or combinations of peaceful and destructive systems, the choice must be made how our lives and powers will be used. The choice for me involved the standard of living that I had accumulated and the prestige of power in the management

---

[4]Bible, p. 93.

[5]Albert Schweitzer, Reverence for Life (New York: Harper & Row, 1966), p. 39.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

of technological systems. The choice that I made was to use the mathematics that I love only to preserve life, to assume the responsibility for my choice, and to speak for the integrity of God's creation and the reverence that must be given all life. For I know that God has given me that knowledge of the integrity of his creation and the possibilities within his creation. As Psalm 8:3-4 proclaims:

> When I look at thy heavens, the work of thy fingers,
> the moon and the stars which thou hast established;
> What is man that thou are mindful of him,
> and the son of man that thou dost care for him?[6]

I am unable to praise myself[7] and my gratitude ascends to God. I myself am lifted above a worldly view of life and everything below me disappears from sight.[8] I realize how my life rests in God. I realize if I violate the integrity of the creator that I will destroy my spiritual self.

Then there is the collective choice that society makes when society is aware that there is possible destruction. We as people have supported the development of nuclear power. We are finding with nuclear power that

---

[6]Bible, p. 660.

[7]Hans Walter Wolff, Anthropology of the Old Testament (Philadelphia: Fortress Press, 1974), p. 228.

[8]Schweitzer, p. 39.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

reactor safety, waste disposal and the transport of radioactive material threaten the lives of people and the integrity of the environment. We ought to have reverence for life and for the infinity of life, God. Do we allow someone else to determine what is the integrity of God's creation? Do we allow someone else to determine how to use our technological power? Do we allow society to assume knowledge that no one but God has? Do we allow a future society to have an eternal vigilance that belongs only to God? The choice must be made by society before the reactor is built and before the nuclear waste is buried. Society's vigilance occurs at this point. What is the criterion for this choice?

The criterion is God's commandment: "You shall not kill."[9] Albert Schweitzer asks ". . . how do we lead people toward a true, inalienable ethic of our own, which is capable of further development."[10] Countless individuals will need to transform themselves from reasonable people into people with reason and heart acting together and begin to spell out reverence for life, stewardship and humility.

---

[9]Bible, p. 93.

[10]Schweitzer, p. 117.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

At the time of the choice, then we lead people toward a true unalienable ethic because the person of the future and the environment are threatened. Society must speak against destruction and for the integrity of God's creation.

Hans Jonas in his essay, "Contemporary Problems in Ethics From a Jewish Perspective," tells what happens if society allows the devaluation of nature:

> But, it may be objected, if nature has lost man's respect and ceased to be an object of his reverence, one might expect his respect for himself to have risen in proportion. Man must have gained in metaphysical status what nature has lost--even what God has lost; man has stepped into His place as creator, the maker of new worlds, the sovereign refashioner of things. And indeed, admiration for man's achievement after his long ages of helplessness, and for the genius behind it, is profound and surely not unjust. The collective self-congratulation in which it finds voice sometimes takes the form of humanistic deification: The divine is in man--witness what he can do. But there we come before the paradox noted before, viz., that with his very triumph man himself has become engulfed in the metaphysical devaluation which was the premise and the consequence of that triumph.[11]

In this devaluation of a person, the respect for the person is lost which is in contrast to ethical precepts which must be based upon restraint. These ethical precepts tell "us what not to do, but not what to do." They fit the modern day situation because of the power

---

[11]Hans Jonas, Philosophical Essays (Englewood Cliffs: Prentice-Hall, 1974), p. 174.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

involved.[12] We are overwhelmed by our own possibilities and our unprecedented situation in the use of nuclear power. Hans Jonas proposes a solution to this devaluation of a person based upon this commandment and requiring the recapture of a sense of reverence.

> The recovery of that sense, something more positive than the merely negative sense of caution which humility suggests, is the next step. Informed by the idea of creation, it will take the form of reverence for certain inviolable integrities sanctioned by that idea. The doctrine of creation teaches reverence toward nature and toward man, with highly topical, practical applications in both directions.[13]

We ought to base our ethical precepts and reverence for life on the creation with its infinite minuteness of atoms and its infinite expansiveness of the universe. We ought as ministers to illustrate our views of the creation in contemporary terms that will have meaning to the scientists and the technologists.

When reverence is established through stewardship in technological practices and through humility in the use of technological power, then we know how to choose. When we choose life, then we praise God because his universe holds the possibilities of survival, of new energy sources, of other values than the highest standard of living. Each person makes his/her choice.

---

[12]Ibid., p. 181.

[13]Ibid., p. 179.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Society makes its choice through reverence and praise. We watch the culmination of the moon's exploration through world-wide television. Our reverence, our humility, and our stewardship leads us to praise our creator. We discover new natural resources as new energy sources and we praise the creator of these resources because we preserve the integrity of the environment. We watch the saving of life. We praise the creator of this life. This praise must be shared and expressed collectively.

The church must echo and must lead this praise for its people know our creator. The church knows God's commandment. The church knows that love of God and love of neighbor are the basis of reverence. The church knows that people have dominion over nature and that all people are created in God's image. The church knows that God requires of us humility.

The prophetic judgment in its final intention is grasped when we answer like ancient Israel with doxologies and hymns of thanksgiving as in Amos 4:13:[14]

> For lo, he who forms the mountains, and creates the wind, and declares to man what is his thought;
> who makes the morning darkness,
> and treads on the heights of the earth -
> The Lord, the God of hosts is his name![15]

Our final destiny is to praise God.

---

[14]Wolff, p. 228.

[15]Bible, p. 1111.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

NORMATIVE JUDGMENTS

There are many calls to us to praise God. The church must lead. We ought to express reverence for life in its negative terms, "You shall not kill"[16]; and illustrate it with unprecedented situations such as nuclear power and the requirement for society's vigilance of nuclear development. We ought to lead people toward an ethic which spells out reverence for life based upon God's love, our understanding of God as infinite life, and our communion with God.

We as ministers ought to stress our relative position in the creation in God's universe and our destiny as steward over God's creation. The universe, its power and the development of technological power ought to be presented in terms of the possibilities and consequences.

In our choices of actions regarding technological power, we ought to praise God for his creation, enter into grateful dialogue with our creator and use technological power for the preservation of life and the environment.

As ministers, we ought to lead the praise of God and to preach about the "image of God," emphasizing human neediness and capabilities within the creation and respect for the person's freedom and dignity.

---

[16]Ibid., p. 93.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

We ought to preserve nature's integrity. As ministers, we ought to lead the praise of God and the works of his creation. We ought to emphasize our lack of total knowledge, our awareness of the mystery of God, and our need for experiental knowledge in finding our own meaning of life, but also risking a loss of meaning. We ought to point out the discord between nature dependent upon God and nature vulnerable to technological power.

When we discover our superiority in the world and our minuteness in relation to the universe, we do not praise ourselves but our gratitude ascends to God. We as ministers ought to stress this distinction.

As ministers, we ought to preach that prophetic judgment in its final intention is grasped when we realize our final destiny is to praise God.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Chapter 5

ISSUES FOR THE CHURCH

The ethical issues presented by technological practices and power are very involved. To find solutions to these issues are more than this professional project undertakes. Further development is needed as indicated in the programs of Church and Society, World Council of Churches, 1976-1981:

> Few now believe that science can yield all knowledge or solve all problems of man and society. . . . In any case, Christianity grounded its moral principles in theological principles, and here we must realize that theology itself is in serious disarray. It has no relevant value-system to present in the ethical debates about science . . .
>
> To respond to this challenge, theology needs to rethink its doctrine of man and nature. Also, scientists who are Christians need to be able to integrate their views of nature and man drawn from science, with their faith in the God of nature and man. . . . The Old and New Testaments show that there is an integral relation between individual men, society and nature.[1]

This paper proposes within the Church and involving the minister a discussion of issues in Bible classes and a presentation of one issue as part of a sermon. Old Testament texts, reverence and praise are the basis. Other ways of presentation can be used and must be used by the Church to present the issues to its people in a

---

[1]"The Contribution of Faith, Science, and Technology in the Struggle For A Just and Sustainable Society," Anticipation, no. 23 (November 1976), 34.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Christian perspective such as task forces in social concerns and education. This paper proposes only a beginning presentation.

BIBLE CLASSES

The issues that the minister can deal with in Bible classes would be technological practices and technological power. These two issues would be presented in the context of stewardship using the text found in Genesis 1:26-27 and of humility, Micah 6:8.

In chapter two, stewardship emphasizes that life and nature are gifts of God and means that we care for life and nature before it reaches the limits for survival. The issue of survival and the trends of modern technological practices accumulating into a danger zone are presented using Rander's world model simulation. The specific issue would deal with technological practices in the use of a natural resource and its effect on pollution. Then the members of the Bible class and scientists who were Christians would add their understanding of the specific issue.

What can we do? It is important to realize that our answer to this question is dependent upon our choice of what is good. The criteria for all actions becomes obeying God, the Creator, so that our cumulative actions hook up reason with creation. How do we understand ourselves and the will of God in technological practices?

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Then scientists and other members of the class would present their views and illustrations. Then together we deal with the logic of handling the issue that the Biblical concept of stewardship requires of us.

In chapter three, the issue is nuclear power. The risks and the potentialities in modern life because of the further expansion of nuclear power calls for the use of nuclear power with utmost humility and wisdom--a sense of reverence. Nuclear power for this generation is held over against reverence for life in future generations. With the development of modern technological power and the ethical and moral choices involved, we need to go back to the ancient principle in Leviticus 19:18b. Is not this concern for persons of the future still a matter of the heart? God requires of us both reason and love in our actions toward him, Hosea 6:6. The report from Church and Society, World Council of Churches presents divergent views of nuclear power. Scientists who are Christians and members of this class can present their views of humility, love of neighbor, risks and potentialities of nuclear power, and love and reason in our actions. I as the minister would share the experience of how the space team searches for the mystery of the universe in the exploration of the moon. I am humbled by God's creation and that means that I protect the integrity of the creation. God is made known to the technologists through the "revelation of

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

works" within the creation. I as the minister would advocate the use of our knowledge to enhance life and our environment by choosing safer energy sources. The class would deal with the issue using the Biblical concept of love and humility.

PASTORAL PREACHING

In preaching, the minister uses expository preaching and illustrates a sermon around the theme of reverence and praise. As Hans Walter Wolff states:

> . . . In praise such as this the destiny of man--his destiny to live in the world, his destiny to love his fellow men, and his destiny to rule over all non-human creation--finds its truly human fulfillment.[2]

After the sermon and the worship service, there is a chance for feedback from members of the congregation.

In chapter four the issue is reverence or lack of reverence. The choice is before us either to enhance the creation or to destroy the creation because of technological power. I would begin the sermon with an illustration of the creation, reverence and the choice such as the example of the powerful rocket that puts people in a position to have various forms of power--solar energy or jet fuel. The scripture from Psalm 8:3-4 expresses reverence in ancient times. In trusting God, people also

---

[2]Hans Walter Wolff, Anthropology of the Old Testament (Philadelphia: Fortress Press, 1974), p. 229.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

obey his commandment, "You shall not kill."[3] Then I would develop the point that choice of the use of nuclear power may end in threatening people and requiring a vigilance that belongs only to God. I would illustrate the choice that has been made by the great scientist, Albert Einstein, in the development of the atomic bomb. Scientists choose how to use knowledge and technological power. Then society has a collective choice before the reactor is built and before the nuclear waste is buried. Society must speak against destruction and for the integrity of God's creation. We watch the saving of life. We praise the creator of this life. Then an illustration of how the Church echos and leads the praise.

The feedback from the congregation occurs after the completion of the sermon and/or Worship Service. Opposing views would be discussed in that death is permissible. Then we would look at what is the intention when nuclear power is built, when the waste problem is not handled, when the land area where nuclear waste is buried is restricted. Is the intention to allow death. This is in contrast to a car driving on a freeway, when a driver does not intend to have an accident although the accident statistics predict it. The class would deal logically with the issue.

---

[3]Bible, The Oxford Annotated Bible Revised Standard Version (New York: Oxford University Press, 1963), p. 93.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

GLOSSARY

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

BIOSPHERE--the (complete organism) of the planet, object of entirely new order, object of active man (Jonas, p. 9); extra-human nature (Jonas, p. 10).

CREATION--(1) teaches reverence toward nature and man (Jonas, p.179). (2) the creation of mankind as a whole but also the evolution of the individual, indeed of one's own life is traced back to Yahweh as being a work of art fashioned by his hands (Wolff, p. 97).

EARTH--is physical and hence the realm of the physicist, the technician, and the engineer (C. R. Kurien, India, Anticipation, no. 8 (September 1971), 15)

GOD'S CREATION--All and everything that is to be found in the world is revealed as being God's creation: consequently, for the man who has grasped this, there is neither a divine earth, nor divine beasts, nor divine constellations, nor any other divine spheres basically inaccessible to man (Wolff, p. 162).

INHUMAN MAN--whenever man is overpowered by things which he himself is meant to overpower, inhuman man is born (Wolff, p. 226).

KNOWLEDGE--under these circumstances, becomes a prime duty beyond anything claimed for it heretofore, and the knowledge must be commensurate with the casual scale of our action (Jonas, p. 10).

NATURE--is mere object, in no sense subject, if it expresses no creative will, either of its own or of its cause, then man remains as the sole subject the sole will.

TECHNE--(1) in former times, techne was a measured tribute to necessity, not the road to mankind's chosen goal, a mean with a finite measure of adequacy to well-defined proximate ends. (2) now, techne in the form of modern technology has turned into an infinite forward-thrust of the race, its most significant enterprise, in whose permanent, self-transcending advance to ever greater things the vocation of man tends to be seen, and whose success of maximal control over things and himself appears as the consummation of his destiny (Jonas, p. 11).

TECHNICAL KNOWLEDGE--nourishes our power to act, and predictive knowledge falls behind it (Jonas, p. 11).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

TECHNOLOGICAL POWER--has turned what ought to be tentative, perhaps enlightening plays of speculative reason, into competing blueprints for projects, and in choosing between them we have to choose between extremes of remote effects (Jonas, p. 177).

TECHNOLOGY--(1) applied science. (2) child of natural science, science brought to bear on its object, indifferent to nature, in terms of action (Jonas, p. v). (3) studies done in the United States in the fifties and the sixties have shown that anywhere between 70 to 90 percent of the growth of the United States during the last 100 years or so cannot be accounted for in terms of physical resources, land, labour and capital. Economists have attributed all this to "technology." (4) it is, as at least one honest economist has admitted, simply "a measure of our ignorance" and consists of all that we have not been able to identify and measure, including human ingenuity, educational improvements, social organizations and the like. (5) in his treatment of growth Dr. Randers does not even appear to be aware of what we economists consider to be "technology." (C. R. Kurien, India, Anticipation, no. 8 (September 1971), 15)

ULTIMATE WISDOM--contemporary man does not possess because he denies the existence of its object: transcendent truth and absolute value, beyond the relativities of expediency and subjective preference (Jonas, p. 178).

WCC--World Council of Churches

WISDOM--the meaning implanted in creation. Only God understands the way to it, Job 28:23 (Wolff, p. 227).

WORK--belongs to the basic commission of the Creator to his creation (Wolff, p. 128).

WORLD--(1) first, . . . becomes object of man's knowledge, then becomes the object of his will, and his knowledge is put at the service of his will, and the will is, of course, a will for power over things (Jonas, p. 173). (2) is social and hence the domain of the politician, the sociologists, and the economists. (3) consists of the "earth" and the network of its physical relationships, but also human motivation, institutions and the net-work of social relationships whereby the physical earth is transformed into the social world (C. R. Kurien, India, Anticipation, no. 8 (September 1971), 15)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

BIBLIOGRAPHY

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Abrecht, Paul. "Introductory Note: Next Step in the Ecumenical Study of Technology and the Future of Man and Society," Anticipation, no. 7 (April 1971), 1-3.

Bible. The Oxford Annotated Bible Revised Standard Version, ed. by Herbert G. May and Bruce M. Metzge New York: Oxford University Press, 1962.

Birch, Charles. "Creation, Technology and Human Survival, Called to Replenish the Earth" (Document no. A 1) Nairobi, Kenya: World Council of Churches, Fifth Assembly (December 1, 1975), 1-14.

Cobb, John B., Jr. Is It Too Late? Beverly Hills, CA: Bruce, 1972.

"Editorial Note," Anticipation, no. 1 (April 1970), 1.

"Editorial Note," Anticipation, no. 8 (September 1971), 1.

Elliott, Charles. "Comments by," Anticipation, no. 8 (September 1971), 16-18.

Frankena, William K. Ethics. 2d ed. Englewood Cliffs: Prentice-Hall, 1973.

Gill, David. "Editorial Note, Technology in the Struggle for a Humane Future: A Challenge to the Churches," Anticipation, no. 2 (June 1970), 1-3.

Hosea, trans. Gary Stansell from German. Philadelphia: Fortress Press, 1974.

Jonas, Hans. Philosophical Essays: From Ancient Creed to Technological Man. Englewood Cliffs: Prentice-Hall, 1974.

Kurien, C. T. "Comments by," Anticipation, no. 8, (September 1971), 14-16.

Lehmann, Paul L. Ethics in a Christian Context. New York: Harper & Row, 1963.

Macquarrie, John (ed.) Dictionary of Christian Ethics. Philadelphia: Westminster Press, 1967.

Mahon, John. "Liberation From Slavery in Early Christian Experience." Unpublished Rel.D. dissertation, School of Theology at Claremont, 1974.

Niebuhr, H. Richard. The Meaning of Revelation. New York: Macmillan, 1941.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

"Plan for an Ecumenical Hearing on the Risks and Potentialities of the Further Expansion of Nuclear Power Programs," Anticipation, no. 20 (May 1975), 4-8.

Rad, Gerhard von. Wisdom in Israel. Nashville: Abingdon Press, 1972.

Randers, Jørgen. "The Carrying Capacity of Our Global Environment--A Look at the Ethical Alternatives," Anticipation, no. 8 (September 1971), 2-11.

Sanders, Gerald De Witt, and John Herbert Nelson (eds.) Chief Modern Poets of England and America. New York: Macmillan, 1929.

Schweitzer, Albert. Reverence for Life. New York: Harper & Row, 1966.

"The Contribution of Faith, Science and Technology in the Struggle For A Just and Sustainable Society," Anticipation, no. 23 (November 1976), 29.

Weinberg, Alvin M. "Social Institutions and Nuclear Energy," Anticipation, no. 20 (May 1975), 9-14.

Wolff, Hans Walter. Anthropology of the Old Testament, trans. by Margaret Kohl from the German. Philadelphia: Fortress Press, 1974.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

APPENDIX

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Appendix A

ECUMENICAL INQUIRY BY WORLD COUNCIL OF CHURCHES

The question of the future of humanity and society in a world of science-based technology is one of the major issues facing the world between the Fourth Assembly of the World Council of Churches at Uppsala, Sweden in 1968 and the Fifth Assembly at Nairobi, Kenya in 1975. The essays in Anticipation provide an exchange of information and ideas in the ecumenical inquiry, The Future of Man and Society in a World of Science-Based Technology under the auspices of the Department of Church and Society, World Council of Churches. The essays are a source of normative judgments about ethical issues. Judgments are based on the ideas that humanity and the environment are good, that power must be used with humility, and that our creator, God is dependable.

Table 1 in this appendix shows the progression and the development of the International meetings under the auspices of the World Council of Churches, the dissemination of information through Anticipation and the issues from the African, Asian, Latin American and Western views. The inquiry began in 1969. As the study moves along the depth of the study increases. In 1970, an exploratory conference was convened to plan the inquiry in various areas of science, social science, economics and theology. In 1971, the issues were reviewed and refined. In 1972,

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

conferences on human environment, economic growth and social justice were held. In 1973, separate regional meetings concerning the Asian perspective and the technological future of the industrialized nations were held. In 1974 at Bucharest, Romania, two opposing views of the future confronted each other and heard each other out. One view concerns economic and social justice. The other view concerns human survival. In 1975, the central issue became nuclear power.

At Nairobi the technological challenge to Christian theological and social thought was presented in a memorable address by Professor Charles Birch, Head of the School of Biological Sciences of the University of Sydney, Australia, and for the last five years vice-chairman of the WWC inquiry on Science, Technology and Society. The basic challenge in his address, "Creation, Technology and Human, Called to Replenish the Earth" can be stated:

> A technological society of some form or other is here to stay. . . . If the life of the world is to be sustained and renewed, as directed in Genesis, it will have to be with a sort of science and technology governed by a new sort of economics and politics. That is what the sustainable global society is all about. It will not come without radical thinking and revolutionary transformations in science and technology and in economics and politics. The decisions we have to make are not just economic and political ones they are also scientific and technical.

Many recommendations for study have been made in Anticipation no. 23 which includes planning a world conference on the Just and Sustainable Society in 1979

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

before the next Assembly. The consultation would involve some economists, ecologists, trade unionists, industrialists and technologists and would challenge them "to face up to the problems of economic planning for a just and sustainable society at national and other levels, in contrast to traditional concepts of economic growth."

I believe that the Church must challenge, more directly than in Conferences and consultations, our scientists and technologists in the industrialized and developed countries, based upon the creation in Genesis and that the views of two-thirds of the earth's people in poverty must be represented in any future Anticipation studies.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1

International Meetings, Anticipation and Issues

DATE	INTERNATIONAL MEETING	ANTICIPATION	AFRICAN VIEW		ASIAN VIEW		LATIN AMERICAN VIEW		WESTERN VIEW	
			essayist	issue	essayist	issue	essayist	issue	essayist	issue
APR 1970		#1					Lopes	3rd World Scientific Development		
JUN 1970	Exploratory Conferences, · plans for inquiry	#2 a challenge to church ethical issues, Uppsala sharpened concerns								
SEP 1970		#3 two statements Technology and Society			Mushakoji	Techno-logical Culture				
OCT 1970		#4 Impact of Technology on Man and Society			Patmar	Powerful, Powerless	Rofman	Modify Phenomena	Mead	Diversity, The Necessary for all
DEC 1970		#5 Theology and Change, Technology and the Future.			Panikar	Technology is datum, dynamism of universe				
JAN 1971	Addis Ababa, Central Committee WWC									
FEB 1971		#6 World Population Growth	Gaisie	Demographic Prospects			Gutierrez	Implications of Population		

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1--Continued

APR 1971	Working Group, Science and the Quality of Life	#7 NEXT STEPS IN THE ECUMENICAL STUDY. Economic and Political Choices in a Technological era.							
MAY 1971	Nucleus of International Group, Images of the Future								
JUN 1971	Nemi, Italy, Working Committee on Church and Society • review and refine the way issues are being formulated • determine systematic program • one important objective								
SEP 1971		#8 The Future of the Global Environment	Elliott	Model Limitations, Time, Values.		Hardoy	Urban Betterment	Rander's	EARTH'S CARRYING CAPACITY
OCT 1971		#9 Images of the Future				Assmann	Liberation		
FEB 1972		#10 The Future of Science and the Social Responsibility of the Scientist	Nwosu	Scientists, No Future.					

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1--Continued

DATE	INTERNATIONAL MEETING	ANTICIPATION	AFRICAN VIEW		ASIAN VIEW		LATIN AMERICAN VIEW		WESTERN VIEW	
			Essayist	Issue	Essayist	Issue	Essayist	Issue	Essayist	Issue
JUN 1972	United Nations Conference on the Human Environment, Stockholm									
JUL 1972		#11 The Churches at Stockholm . ethical concepts-ecological struggle • ecology and social justice, traditional understanding • scope of spiritual question	Obeng	How to achieve Quality of Life. Love.					Ward Mydral	Only One Earth. Economics, Improved Environment
SEP 1972	WCC Consultation on Environment, Economic Growth and Social Justice, Wales. • go further with an ethical perspective to view the challenge of the human environment.	#12 Growth Debate			Hahm	Non-domineering God, Pollution.			Birch Whyte	Population, Environment. Human Responsibility.
DEC 1972		#13 Report of an Ecumenical Consultation on Global Environment, Economic Growth and Social Justice. . scientists and technologists representing many different disciplines and technologies.			Imahori	Search for Breakthrough			Abrecht Schumacher Birch	4 concerns Small, Simple Non-violent, Beautiful. Biological Limitations.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1--Continued

APR 1973	Conference on the Scientific, Technological and Social Revolutions in Asian Perspective, Malaysia.					
JUN 1973	The Technological Future of the Industrialized Nations and the Quality of Life, France.					
AUG 1973		#14 Report on Ecumenical Conference on the Scientific, Technological and Social Revolutions in Asian Perspective.	Shishido Kuala Lumpur Report	Clean Industry. Tasks for Asian Churches		
DEC 1973		#15 The Technological Future of the Industralized Nations and the Quality of Life.				
MAR 1974		#16 Theological debate	Koyama	Two Minds, Lord's Supper.	Derr	Man is unique.
			Verghese	Future of God, of Universe.	Cobb	Christian concern, Non-human World.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1--Continued

DATE	INTERNATIONAL MEETING	ANTICIPATION	AFRICAN VIEW		ASIAN VIEW		LATIN AMERICAN VIEW		WESTERN VIEW	
			Essayist	Issue	Essayist	Issue	Essayist	Issue	Essayist	Issue
MAY 1974		#17 Science and Technology for Human Development- The Ambiguous Future and Christian Hope. • Preparatory Papers for the 1974 World Conference. • Basic input on 4 main sub-themes.	Nwosu	Cooperation Self-Reliance.			Herrera	Ideology, Import Technologies, Values.	Shinn	Social Justice
24 JUN - 2 JUL 1974	1974 World Conference on Science and Technology for Human Development - The Ambiguous Future and the Christian Hope. Bucharest, Romania. • Draw together ideas and recommendations from national, regional and international ecumenical meetings • Explore issues arising from the concern for our future in a technological world.									
AUG 1974		#18 Christian Social Thought in Future Perspective			Parmar	New Ethos, Social Justice.			Borgstrom	Food, Human Survival

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1--Continued

DATE	INTERNATIONAL MEETING	ANTICIPATION	AFRICAN VIEW		ASIAN VIEW		LATIN AMERICAN VIEW		WESTERN VIEW	
			Essayist	Issue	Essayist	Issue	Essayist	Issue	Essayist	Issue
NOV 1974		#19 Science and Technology for Human Development, The Ambiguous Future and the Christian Hope Report, 1974 World Conference in Bucharest, Romania	WCC Report	Self-Reliance, Technological Options, Quality of Life					WCC Report	Hope for Greater Justice, Theological Understanding of Humanity and Nature
MAY 1975		#20 Facing Up to Nuclear Power			Raj Ramanna	Self-Reliance			WCC Report Weinberg	Plan for Ecumenical Hearing, Nuclear Power, Social Institutions
OCT 1975		#21 Report on Nuclear Energy	Shem Arunger-Olende	Energy Options	K. T. Thomas	Nuclear Power Strategy	Sabato	Introducing Nuclear Power	Shinn	Ethical Reflection
DEC 1975	Fifth Assembly, World Council of Churches, Nairobi, Kenya, Discussion of Social Responsibility in a Technological Era									
MAY 1976		#22 Science and Faith, With A Special Report on the Nairobi Assembly			Koyama	Theology, Technology, Culture	Dumas	Encounter, Theologians, Scientists	Birch	Sustainable Global Socie
NOV 1976		#23 Energy for a Just Sustainable Society							Proposal for Church and Society	Faith, Science and Technology Just and Sustainable Society

Appendix B

LESSON PLANS

Lesson plans of two Bible classes that are outlined in Chapter 5 are contained in this appendix. The theme is "Reverence in a World of Science-Based Technology." The material to be used during the lessons are Bible, chapters two and three of Reverence in a World of Science-Based Technology, 35 mm slides of the moon exploration, Anticipation, no. 8, and Anticipation, no. 20. Classroom supplies are blackboard, paper, pencils, slide projector and screen.

Table 2. Lesson Goals

Lesson Titles	Goals
1. Stewardship	To state: What is stewardship? What are issues involving modern technology? What can we do?
2. Humility and Wisdom	To state: What is humility and wisdom? What are issues involving technological power? What can we do?

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 3. Lesson Plan 1 - Stewardship

Goals for Class	Reference	Carrying Out the Plans
How do you understand stewardship?	Genesis 1:26-27	1. Leader review pages 20-23, 28 and 29, Reverence in a World of Science-Based Technology. 2. Small groups discuss meaning of stewardship as related to Genesis 1:26-27. 3. Leader list meanings of stewardship on blackboard coming from each small group.
Explain a specific technological practice that affects us and the environment.	Jørgen Randers, "The Carrying Capacity of Our Global Environment --A Look at the Ethical Alternatives," Anticipation, no. 8 (September 1971), 2-11.	1. Leader summarizes pages 23-27, Reverence in a World of Science-Based Technology. The issue of survival and the trends of modern technological practices accumulating into a danger zone is presented using Rander's world model simulation. 2. Leader suggests specific technological practices: 1 car on freeway, depletion of natural resources. 3. Small groups state how specific technological practices affect us and the environment. List technological practices and their effects. 4. Scientists present their understanding of each technological practice.
What can we do?	Genesis 1:26-27	1. Leader review pages 28-30. 2. Group accept premise that we as stewards affect the goodness of nature. Future life depends upon our life and the preservation of our life. 2. Small groups discuss continuation of current growth practices. 3. Leader list current growth practices on blackboard. Leader present pages 30-33. 4. Scientists present their judgments upon current growth practices.
How do we understand ourselves and the will of God in technological practices?	Genesis 1:26-27, Hans Walter Wolff, Anthropology of the Old Testament, p. 160.	1. Leader discuss pages 33-34. 2. Group assume that the criteria for all actions becomes obeying God, the creator, so that our cumulative actions hook up reason with creation. 3. Small groups propose their answers to technological practices. 4. Leader list the responsibilities of a person, groups and corporations for stewardship.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 4. Lesson Plan 2 - Humility and Wisdom

Goals for Class	Reference	Carrying Out The Plans
How do you understand humility, wisdom and reverence?	Leviticus 19:18b, Hosea 6:6, Alvin M. Weinberg, "Social Institutions and Nuclear Energy," Anticipation, no. 20 (May 1975), 9-14.	1. Leader review pages 37-42 including the ancient principle in Leviticus 19:18b; God's requirement that we use both love and reason in our actions, Hosea; and over-commitment to nuclear power. 2. Small groups discuss humility and wisdom according to these three things. 3. Leader list meanings of humility, wisdom and reverence on the blackboard.
Express divergent views of nuclear power.	"Plan for an Ecumenical Hearing on the Risks and Potentialities of the Further Expansion of Nuclear Power Programs," Anticipation, no. 20 (May 1975), 4-8.	1. Leader review pages 42-45 including the ethical dilemma and the need to restore the "love of neighbor" with reason. 2. Scientists who are members of the class should present their views of the risks and potentialities of nuclear power and the need to restore a sense of reverence. 3. Leader summarize scientists' views on the blackboard.
Explore the principle of goodness.	Hosea 6:6, Micah 6:8	1. Leader present pages 46-49 including where reason's point of view and the heart's point of view meet. 2. Small groups discuss their ideas of humility that becomes known through the "revelation of God's works." 3. Leader list "revelation of works" and humility.
What can we do?		1. Leader state the premise that we use our "knowledge" to enhance life and our environment by choosing safer energy sources. 2. Small groups discuss what we ought to do to deal with the issue of nuclear power using the Biblical concept of love and humility. 3. Leader list the normative judgments and the group discuss these judgments.

Appendix C

SERMON AND EVALUATION

The title of the sermon is "Our Church's Choice." It was preached March 12, 1978 at Bridgeport United Methodist Church, Bridgeport, Washington. Material from Chapters three and four are used in the sermon. The sermon follows, then the evaluation by the congregation. Seventeen out of forty people responded by filling out evaluation forms.

OUR CHURCH'S CHOICE

The scripture this morning is taken from Exodus 20:13, Psalm 8:3-4 and Amos 4:13.

We know God through the revelation of his works: the creation of atoms, the creation of the universe, the creation of a person, and the creation of societies. We know God through the revelation of his word. Hosea writes "For I desire steadfast love and not sacrifice, the knowledge of God, rather than burnt offerings." The book of Leviticus says "You shall love your neighbor as yourself."

The unfathomable mystery of life still remains. God through his steadfast love shows us how reason and love act together.

Using modern technology, we now explore the heavens, the moon and the stars. A modern example of power is the Saturn 5 rocket which is used to boost the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

manned spacecraft Apollo into orbit around earth before the astronauts' voyage to the moon. The Saturn 5 rocket uses a cluster of five single rockets so that the power to lift off the spacecraft into earth orbit is gained. We use this powerful rocket to master earth, but then the spacecraft moves into its translunar trajectory. The power that was used to conquer earth becomes insignificant and we find ourselves in the vast universe where the power of the rocket is no longer used and where we are dependent upon a new source of power from God's universe.

I realize how minute I am compared to God's universe, how insignificant our technological creation of power is compared to the power within God's creation and how God's creation always offers a solution or safe way in our exploration. The use of a way that does not destroy is part of my stewardship.

The choice is before us of what we will do with this earth-orbiting capability.

In contrast to the universe, there is the atomic structure found in everything.

The crystal catches the light and it sparkles. The light is refracted and we see colors of the rainbow. We value the beauty of the crystal and we seek it out even as in the Book of Job where the hunt is for precious gems which contain crystals. We study the formation of the crystal, its structure, its impurities, and try to see

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

how it is created. Through statistical mechanics we know the probable distances which bind those molecules within the crystalline structures and which give its strength. Then we start to break it down. We know its neutrons, protons and electrons. We measure each particle in high speed accelerators. The target, which may be any substance that will emit particles, is surrounded by walls of cement that protect people from radiation. The particles are accelerated using intense magnetic fields. They hit the target and others are emitted into an emulsive substance. I have watched other physicists control the experiment at the cyclotron. We control the nuclear process of acceleration remotely outside the cement chamber using dials and meters. Later, we measure the track of the emitted particles in the pattern of an emulsion that we view through a powerful microscope.

In the numbers, in the distances of the track, we may forget its original beauty that we saw in the crystalline structure, but we may see the beauty of the eternal order. We are now removed from contact so that we can no longer touch it, see its beauty, but we sense the power that comes from within that nucleus when we emit those particles. In sensing this power, we either lose our perspective or we gain a deeper reverence for the crystalline structure and for the eternal order that the mathe-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

matical formulae describe. The physicist did not establish that order. He is only discovering what it is. The creation is there and still unknown.

How can we use this nuclear power? If we lose our perspective, then we develop our power regardless of its effects on human life and the planet. We interrupt the natural process having lost our sense of reverence. We express reverence when we use technological power to enhance human life and the planetary environment.

In January Cosmos 954, the Russian spy-in-the-sky satellite carried a nuclear reactor to power its ocean-scanning radar and radio circuitry. This satellite made a fiery return to earth. That satellite crashed into the atmosphere over a remote Canadian wilderness and apparently emitted radiation.

American space scientists admitted that if the satellite had failed one pass later in its decaying orbit, it would have plunged toward earth near New York City at the height of the morning rush hour.

It could have been a disaster because of the nuclear radiation. This is an example of no reverence for life.

The highest reverence is to give thanks for everything or to praise God. Reverence comes when we understand our stewardship and when we have been humbled. Then by trusting and obeying God, we express in fact what is the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

highest reverence. The trust is in the creator that he will provide us energy sources without the need to deplete our oil resources and without the need to threaten human life and the environment with radioactive waste or with reactor incident so that our lives will be enhanced and sustained. The trust is in people who use reason with love so that we do not need to threaten others.

In trusting God we also obey his commandment:

You shall not kill.

Albert Schweitzer exclaims that this is reverence for life expressed in negative terms.

Then we are confronted with the choice of how we use our personal knowledge, our technological practices, and our technological power. Each technological practice increases someone's personal knowledge. Each technological power increases someone's power. The criteria for the choice is God's commandment:

You shall not kill.

The choice for me involved the standard of living that I had accumulated and the prestige of power in the management of technological systems. The choice that I made was to use the mathematics that I love only to preserve life, to assume the responsibility for my choice, and to speak for the integrity of God's creation and the reverence that must be given all life. For I know that

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

God has given me that knowledge of the integrity of his creation and the possibilities with his creation. As Psalm 8:3-4 proclaims:

> When I look at thy heavens, the work of thy fingers,
> the moon and the stars which thou hast established;
> What is man that thou are mindful of him,
> and the Son of man that thou hast care for him?

I am unable to praise myself and my gratitude ascends to God. I myself am lifted above a worldly view of life and everything below disappears from sight. I realize how my life rests in God. I realize if I violate the integrity of the creator that I will destroy my spiritual self.

The Church must echo and must lead this praise for its people know our creator. The Church knows God's commandment. We know that love of God and love of neighbor are the basis of reverence. We know that people have dominion over nature and that all people are created in God's image. We know that God requires of us humility.

The prophetic judgment in its final intention is grasped when we answer like ancient Israel with doxologies and hymns of thanksgiving as in Amos 4:13:

> For lo, he who forms the mountains, and creates the
> wind, and declares to man what is his thought;
> who makes the morning darkness,
> and treads on the heights of the earth
> The Lord, the God of hosts is his name!

Our final destiny is to praise God.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5. Form for Evaluation of Preaching

Seventeen people responded out of forty people.

The composite follows.

Name Bridgeport Church Occupation _____ Date 3-12-78

Was the preacher persuasive?	(10) yes	(3) no
Did the preacher disturb you deeply?	(1) yes 1	(9) no
If so, in what way?		
Did the preacher hold your attention?	(13) yes	(0) no
Was the sermon exciting?	(5) yes 1	(6) no
Was the preacher's sermon instructive?	(8) yes	(0) no
If so, mention one thing you learned.		
Did the preacher encourage you?	(7) yes 1	(2) no
If so, explain how.		
Did the preacher in the sermon say what the Biblical text says?	(11) yes	(0) no
Did the preacher relate the bearing of the text upon today's issues?	(11) yes	(0) no
Did the preacher seem to have a central purpose for her sermon?	(9) yes 1	(0) no
If so state it in 10 words.		

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5--Continued

STRUCTURE	Excellent	Good	Fair	Poor
A. Introduction				
Was it striking?	(5)	(5)	(2)	(0)
Did it indicate the theme of the sermon?	(7)	(4)	(1)	(0)
B. Body				
Did the sermon hold together?	(9)	(2)	(2)	(0)
Was the preacher pictorial? (did she paint any pictures?)	(10)	(2)	(0)	(0)

What I like about this preaching? striking and relevant, speaks clearly, can hear and understand, courage and persistence, voice, I'm satisfied, interesting makes me think, can be heard, crystal illustration.

My suggestions for this preacher's increased effectiveness:

Keep topics spiritual. Read Scripture better. Too abrupt.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.